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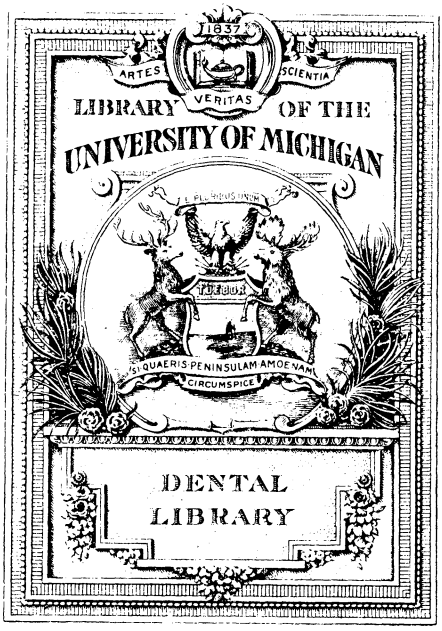
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AMERICAN DENTAL JOURNAL

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LISTERINE TOOTH POWDER

A fourth of a century of continued, satisfactory employment of Listerine has demonstrated to many who have used it during this entire period, that Listerine is the best antiseptic for daily employment in the care and preservation of the teeth. Listerine Tooth Powder, then, is not intended to supplant Listerine in the daily toilet of the teeth, but is offered in response to a popular demand for a frictionary dentifrice to be used in conjunction with this well-known and time-tried antiseptic.

Listerine Tooth Powder is composed of precipitated carbonate of calcium, carbonate of magnesium, oil of cananga, and the antiseptic constituents of Listerine.

The simplicity of its formula, in itself commends the powder. The English precipitated chalk and magnesia are the finest obtainable, and absolutely free from grit; the oil of cananga possesses properties opposed to inflammatory conditions of the gums, and together with the antiseptic constituents of Listerine, adds to the desirable qualities of the product. However, it is to the list of articles which have been omitted from the formula that special attention is directed, and the manufacturers believe the profession will agree that the absence of pumice stone, cuttlefish bone or other abrasive substances, and of sugar, orris root or superficial perfume of any character (the usual ingredients of tooth powders and liable in themselves to fermentative action in the mouth), is a distinct advantage.

Lambert Pharmacal Co.

St. Louis, U. S. A.

FFR

PORCELAIN.

T. ELHANAN POWELL, D. D. S.

CHAPTER VII.

The next and third class of cavities to be considered are proximal cavities in incisors and cuspids. In some mouths decay appears at

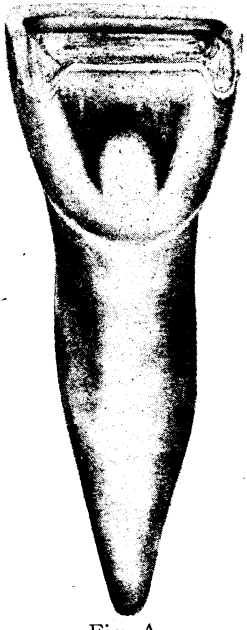

Fig. A.
Cavity preparation for incisal restoration in tooth, with line pulp.

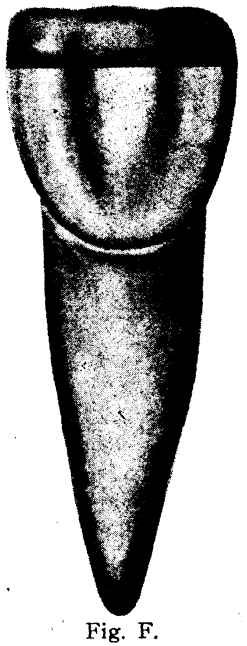

Fig. F.
A completed inlay.

a very early age at the contact point; sometimes causing a small but deep cavity and at other times extending gingivally, lingually or buccally as the case may be. On the direction of the decay depends

largely the shape of the cavity; the small, round, deep cavities being most difficult to fill. It would be almost impossible to obtain sufficient separation in a case of this kind to set an inlay without cutting away freely either the buccal or lingual wall in the cavity preparation.

In Fig. D is shown a form of cavity which requires but little separation, affords the maximum retention with a minimum change

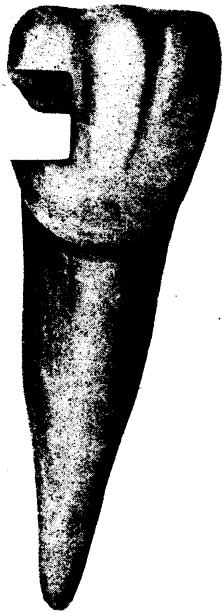

Fig. D.

Proximal view of Fig. D.

This form of cavity requires but little separation, affords the maximum retention, and the color is affected by cement and the shadows less than the crescent shape.

by the cement, showing the shadows less than the crescent shape cavity.

This preparation assumes a deep cavity with small orifice, but with both buccal and lingual walls sufficiently affected to justify extensive cutting. Usually, this cavity is prepared with the buccal orifice somewhat smaller than the lingual so that the finished inlay may be set from the lingual, enabling the force of mastication to drive inlay into place. This makes an inlay which is permanent, making recurrent decay a remote possibility.

Sometimes either the buccal or lingual wall may be spared if of sufficient strength to justify it. In this case, of course, the cavity would be prepared somewhat on the same principle, having four walls instead of three; but in no instance should the margin of the cavity be permitted to come in contact with the opposing tooth. Let it extend beyond the contact point thus observing the self cleansing principle. This may be done still retaining the square outline.

The proximal view of Fig. D taken with the buccal view will give us a fair idea as to how this may be done.

In cases where the decay has extended inciso-gingivally an elongated cavity preparation is preferable bearing out the general idea of the crescent form.

These cavities may be done very gracefully with irregular and curved outlines, having for retention a deep seat gingivally and a groove bucally in the buccal wall of the cavity. An inlay in this form of cavity will resist the force of mastication and have great permanency of endurance.

Occasionally it might be necessary to cut away the buccal instead of the lingual wall but the same idea would regulate the preparation of the cavity.

In this paper I shall treat also cavity preparation for incisal restoration. In the early history of porcelain inlay work we resorted to retaining pits and pins for retention, but we very soon found that this added weakness instead of strength to the inlay, so I here show in Fig. F A the more modern method for cavity preparation for incisal restoration. The cavity is shown lingually and tells its own story, being cut deeply on the incisal and extending toward the gingival on the proximal both mesially and distally.

This "lock" form of cavity makes a restoration which is strong, durable and æsthetic.

(*To be continued.*)

OPERATIVE DENTISTRY.

BY R. B. TULLER, D. D. S.,
CLINICAL PROFESSOR OF OPERATIVE DENTISTRY, CHICAGO COLLEGE OF DENTAL SURGERY.

CAST METAL INLAYS, ETC.

Cast metal inlays are among the newest things of important value that have been brought to the attention of the ever-progressive dental profession. While Dr. W. H. Taggart of Chicago was the first to bring a successful process or method of producing such castings before the profession, no sooner is it made known than others arise and aver that the whole process is old, though not exploited as of value in dentistry until now; and a number of outfits are on the market, some similar in most all particulars to the devices produced and made public by Dr. Taggart. Others differ materially, from a press like a lemon squeezer to an apparatus which forces the metal into the mold by a centrifugal motion. But no matter what manner of pressure is used to force molten metal into all the intricasies of the mold, the production of a model or pattern to begin with, seems to be the same.

In casting things generally a mold is usually made in flasks divisible into halves, at least, and often into several parts, to enable the operator to remove the model. In the Taggart method and those who are following, a model is made that may be invested completely and will melt and be absorbed entirely in the investing material. In other words, it is a disappearing model when heat sufficient is applied, and its limitations in dentistry is only to the extent that wax models can be made, and the size of the flask employed to invest the same; so that solid bridges may be made to the extent of several teeth; or bridges with inlay attachments at either end; or even gold plates may be cast. Of course a model in wax to be removed by melting is not new.

The Taggart method has been heretofore described in these pages, but since the making of cast inlays has become a matter of such stirring interest to the dental profession, it will not be out of place to go over it again in connection with what else may be said.

A specially refined wax is used for models that when liquified by heat will leave no residue. This, warmed to a condition of softness easily worked, is pressed, in sufficient bulk for the purpose, into the wet cavity, which of course has been prepared on the principle of inlay cavities generally, so that an impression will withdraw without

dragging or distortion. This wax is then modeled, a bite taken, and model trimmed and finished with all the care and detail desired in the cast to be produced. The more exacting the care in artistic contour and smooth finish (to which the wax is very susceptible) the more finished and perfect will be the cast; and little is to be done in final finishing.

When all is complete up to this point, the wax should be hardened by applying cold water. Now, a short piece of smooth wire is slightly warmed and one end pressed into the most convenient bulky part of the inlay far enough to be firm when chilled, and serve as a handle by which to lift the wax from the cavity. It should be but partially lifted out at first, and then gently pressed back to place, and perhaps repeated before it is finally lifted out. Prior to the final lift, all margins should be closely inspected to make sure of no fault at any point. This unseating of the wax inlay and reseating may be done with an excavator and the wire, which later acts as a sprue former, is set in at any convenient point afterward. Any marks of the excavator are easily smoothed out so they do not show.

On its removal the model, if not used at once, should be gently deposited in cold water to keep it chilled and safe until ready for the next step.

The next step is to secure the very finest grained investment material obtainable and mix to a rather thick creamy consistency. Now take the wax model by its wire handle, dislodge or absorb surplus water, and apply the investment with either a camel's hair brush or a little spatula as delicate as a toothpick, using every precaution to not disturb the finest feather edge of wax, nor to permit any bubbles.

The former is designed to support the wire and wax model and engage with the flask or ring to give shape to the investment. This former is disk-shape, with a cone-shaped prominence in the center and a hole in the cone to accommodate the wire holding the model. The wire is set in this hole, and the ring or flask referred to is set on the former surrounding the model, so that the latter occupies the center. Now a mix of the same investment, or any other that is good and will stand high heat without cracking, may be made and the flask filled up flush. This must be done with care to not displace that already investing the wax. When hard enough the brass former may be removed from the end by a twist, and a cup (the reverse of the cone) will be found in the investment, with the wire protruding from the center. Warm the wire a little and remove that with a twist.

Now from the bottom of this cup a hole (sprue) runs to the wax model, and from it the melted wax may run when the flask is being dried out thoroughly and the heating that is to follow. What does not run out is burned or absorbed in the investment so that the mold is ready to receive the metal. It is now removed to the press and in the cup is placed the metal to be melted. A small high efficiency flame is turned on and the metal quickly melted until it boils. Then down comes the plunger, terminating in a cap that covers the flask, closing the cup air tight, and in the same movement the flame is cut off and compressed air or gas is let in at such pressure (25 or 30 pounds) that the metal is forced down through the sprue and into the daintiest recesses and traceries of the mold. The oxy-hydrogen flame is superior to the ordinary blowpipe, but involves a flask of nitrous-oxide gas under pressure to be fed to the flame of ordinary gas as required. This gas is used instead of compressed air by Doctor Taggart to force the metal into mold.

After the pressure on the cast is held until it is solid, perhaps a minute, the flask may be dropped into cold water, which softens the investment, and if all has been done properly a perfect copy of the model is found in the cast. While gold is generally used, the system permits of using most any metal that may be cast and properly used in the mouth, from Mellotte's metal up, the flask being heated up only to the requirements of the kind of metal used. For low fusing metal of course requiring a heat only sufficient to get rid of the wax.

There isn't much question now about the value of inlays, or their superiority over the average gold filling. As Dr. C. H. Wright of Chicago says, quoting his words, "The gold inlay in itself is quite indestructible in the mouth, and absolutely unchangeable to the extreme margin. It has many times the strength of any other filling material. As a protection against recurrence of caries, I am satisfied it has no equal, as in eleven years' use I have not seen a single case of such failure, and have inserted gold inlays in a great number of cases of heroic nature."

And again he says, "The use of the rubber dam is one of the most cruel and offensive acts perpetrated by the dentist, although a necessary process in connection with the old style fillings. But with the gold inlay method the dam is rarely necessary or desirable, as the cavity never need be perfectly dry more than the few moments required in setting the inlay."

Now, an inlay made up the old way with matrix, and built up with solder, can be made with the equipment found in most any dentist's office; but to make a cast inlay it seems at first quite necessary to have an outfit that involves some special and considerable expense; and yet the writer knows that some cast inlays are being made with ordinary blowpipe outfit. It is slower and thus may heat up the flask and mold hotter than is desired, and when this is done the integrity of the investment may be injured, so that sometimes a good cast can not be made.

Again, all the systems on the market, it seems, demand a special press and adjuncts. Now, unquestionably the air pressure or something of that nature is the ideal way, but the writer hears of very satisfactory inlays being made without any special press. In fact, he has heard of pressure being applied simply by the thumb, protected by a thick cushion of asbestos, this closing the cup against escape of the molten metal and then forcing it in directly. In small quantities and with a small sprue or opening for metal to flow through, as we have in making inlays, molten gold tends to globulate, and gravity which ordinarily governs will not carry it down into the mold; hence pressure is necessary in some way, and it has a value in being continued until the metal becomes solid, counteracting any tendency to shrink on cooling. Prior to bringing out his final conclusions about casting inlays, Dr. Taggart thoroughly tried and experimented with about all simpler methods, but is convinced that the complete outfit as he has developed and perfected it, is necessary to be exact and bring best and always certain results. One may do many things without the most approved equipment to work with, but the advantage toward perfection is always with the latter. An operator might make a simple gold inlay very perfectly with thumb pressure, but would likely fail on larger and more complicated ones. And the same holds good of a press of the lemon-squeezer order; it might answer in some of the simpler castings, but fail completely on more complicated ones. We cast very good solid cusps for our shell crowns by making an impression in moldine with a tooth or pattern selected, melting our gold in the impression, having enough to fill it flush and a trifle surplus, and then pressing a cool flat piece of steel on top. This cast when trimmed and fitted to the gold band may be soldered, and the crown so made is an excellent one; but we could not make inlays in that way of crude casting. On the contrary, we could cast by the Taggart way

al cusps to a band that would fit with exactness without any fitting after it was cast.

There is such a variety of prosthetic work that may be done by this new method of casting, insuring accuracy, solidity and strength and eliminating the trials of solder work, that flasks and presses should be devised that comprehends the whole range, and not simply small inlay work. This Dr. Taggart has done and it is comprised in his outfit. With this system gold plates may be cast so as to provide for rubber attachments subsequently or to accommodate replaceable teeth as is done when casting bridges. Or extremely thin, soft gold may be used to swage up a plate in the usual way to serve as a holder and guide for building up the wax and adjusting the teeth, and then after investment drive off the wax and cast in the gold to become practically incorporate with the plate in the mold. Frames or skeletons of bridges of the permanent or removable character may be made of wire, etc., filled out with this disappearing wax, replaceable teeth adjusted, etc., and then all the wax replaced with strong cast gold—no soldering.

We speak of the casting process as concerns inlays almost entirely, but the scope of its application is almost unlimited in prosthetic dentistry, and in that direction it will surely develop in importance. In the volume and complexity of such work, as compared with an inlay, nothing short of efficient and reliable paraphernalia will do, and simple thumb pressure or lemon squeezers will hardly fill the bill.

There is a simple way of using steam generated by covering the flask with something wet, as a soft pine block soaked in water and pressed down tightly to prevent escape. The molten gold and hot flask produce the heat necessary to make steam instantly, and the gold is forced into the mold as though done by compressed air.

Very much depends upon the quality of wax used to make the model. It must be soft enough when warmed to be easily pressed into the cavity, with a toughness at the same time that permits of no crumbling as it hardens, and carving is undertaken. When chilled to an ordinary temperature it should be hard enough to permit of gentle handling without liability of getting out of shape. There is already on the market, made by a Chicago company, an elegant wax, specially made for the purpose and put up in convenient sticks.

DENTAL PATHOLOGY.

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DEAN OF DENTAL DEPARTMENT, UNIVERSITY OF ILLINOIS; PROFESSOR OF BACTERIOLOGY AND PATHOLOGY, UNIVERSITY OF ILLINOIS.

We have discussed at some length certain forms of degeneration of tissue and also the pigmentation of certain cellular structure. It is hoped that we might impress an important phase of pathology, not so much from its gross structural changes as from the standpoint of microscopic pathological changes accompanied with certain chemical changes that take place in cellular pathology, determining, as far as possible, the true changes that take place from purely a physiological to a pathological function of the tissue.

Since we recognize that pathology is one of the fundamental biological subjects related to the healing arts, we must come to a true comprehensive understanding of what it means to change from what would be a normal to an abnormal condition of tissue of the body. We have briefly outlined some of the phenomena that characterize the various degenerative processes of tissue that take place under almost all circumstances, outside possibly of the degeneration of tissue that is accompanied by inflammatory processes. We have reached a point in which it is necessary to sketch with as much accuracy as possible inflammatory changes, and our present conception of what really is inflammation.

Inflammation, as it was formerly understood, was purely a clinical process which was designated only by certain symptoms, but which at the present time are not of any vast importance only as clinical factors. We formerly designated inflammation as redness, heat, swelling, pain and impaired function. As our knowledge advanced on clinical and biological subjects, this conception was gradually enlarged to embrace certain phenomena of the form of new tissues during the process of this change. It also embraced some of the forms of tissue formation, outside of the true inflammatory process, even those conditions that were only casually associated with the symptoms of inflammation. After 1837-39, the period of which the two great biological investigators, Schleiden and Schwann, gave to the world the cellular theory of living substance, and how cells both of the low and high forms of life took such an active part

in the true development of all living substance, it was then that we became to understand that the formation and accumulation of cellular substance, both the transient substance and thick substance of the cell were of the most importance in the process of tissue changes in both normal and abnormal processes. It was then only that we became to recognize the so-called cardinal symptoms of inflammation which were only manifestations and not the process of the diseased condition.

We might say that it is only within the last one or two decades that we have become really to consider inflammation as typical biological problems establishing such phenomenal changes as occur in inflammation on purely scientific principles. But however at the present time we have divorced the symptoms of inflammation which, as above mentioned, were only symptoms from the processes that are universally established as phenomena of deviation from the normal structure to an abnormal one; and that every tissue and structure of the body have their peculiar and distinctive phenomena characteristic of the kind of tissue, the nerve and blood supply of the part, as one of the principal features in the investigation of the problems of comparative pathology.

With these general facts before us it is well to rehearse in as brief a manner as possible some of the phenomena that take place in tissue changes during a process of inflammation. Traumatic death of tissue and degenerative alterations of tissue in the presence of certain poisons are of the greatest importance in the consideration of certain changes that are universally present in some particular kinds of inflammation. While trauma and poisons are some of the fundamental features of the process, they are not inherent but rather incidental to the changes.

Under the head of degeneration of tissue we have called special attention to certain albuminous degenerative processes that we recognize as degenerative changes. These changes are sometimes looked upon as having but little relation to inflammatory processes. But in this connection it is well to state that certain poisonous products of bacteria are the principal factors in inflammatory processes. The principles underlying the biological phenomena of inflammation are so closely associated with injuries, heat and cold, and most of all with parasitic life, that inflammation can not be well comprehended until the structure and function of tissue, and the principles

underlying the parasitic forms of some of the most common bacteria and their action, as well as their physiology, are thoroughly understood. Direct trauma, excessive heat and cold are three of the external and very common ways of introducing into the tissues certain bacterial structures or their products, and there producing some of the tissue changes that we recognize as inflammation.

Inflammation may be said to be one of the typical manifestations of the reaction of tissue against a foreign agent. An injury to non-vascular tissue establishes a very different type of tissue change to an injury produced in vascular tissue. If a clean cut be made in a living fibrillar connective tissue not involving blood vessels and only affecting the cells and fibers, and the part again be brought in close adaptation each side of the cut with the other, it will be found that the union will be of a simple exudation from the cells that will immediately bridge over the breach in the continuity of the structure and a regenerative process will be established. It, however, sometimes happens when a cut is made in such structure, injuring as it sometimes does the nuclear substance of the cells, here will be undergoing a sort of a degenerative process of these particular tissue cells, their regenerative powers becoming entirely lost. But there will be certain cells in that vicinity that are entirely uninjured and these cells will at once respond to the rebuilding of the injured part with complete absorption of the cells that have been injured, to the extent that they cannot recover from this injury.

The best representation of such an injury is that of making a sharp but clean incision in the cornea of the eye. In such an incision produced, as it should be, with a perfectly sterile knife, it will be found that a small quantity of fluid will ooze out from the tissue and completely fill the space produced by the incision with a protoplasmic substance that will furnish nutritive function to the projectile structure of the regenerative cells. This protoplasma simply acts as a carrier or medium that will support the regenerative processes of the living cells in that vicinity. Such changes are called the healing of a wound by first intention, a phrase commonly used by the surgeon. In the injuries of connective tissue, in the manner above mentioned, is a typical reaction of fixed connective tissue cells to injured structure.

Injuries produced in vascular tissue may have phenomena that differ materially from the one just referred to. Perhaps what con-

stitutes inflammation in vascular tissue is best illustrated in the placing of the web of a frog's foot under microscope, keeping it well moist with a 5-10 per cent of a salt solution, and with a prick of a needle or pin it will be shown that the mechanical injury to the part will demonstrate a variety of physical and chemical activities in the tissues that cannot be illustrated by any word picture that might be given.

It will be borne in mind that the blood vessels in these parts are made up of living substance and are the principal features in a structural differentiation from the surrounding tissues and the walls of the blood vessels themselves. However, the walls of the blood vessels are capable of responding, not only to the mechanical irritation produced externally to the blood vessels, but are also capable of responding to the volume of blood that is circulating within the walls of the blood vessel. These physical and chemical processes are of the greatest importance in the study of vascular inflammation. These blood vessels have inherent in their structural makeup some of the most scientific mechanical principles known to science. They are also capable of manifesting certain vital principles or subtle energies that are known to living structure. Thoma in his wonderful treatise upon the constitutional structural makeup of the blood vessels has certainly woven into this material form something that cannot fail to be of great interest to the subject and study of living processes, whether they be physiological or pathological processes. In the bladder or mesenteric circulatory processes of the frog, connected as they are with a system of capillaries, are clearly to be seen when the circulation is in any way disturbed. A large number of the cells of the blood gather in large masses and flow rapidly along the blood vessels, and the different cells of the blood are difficult to distinguish one from the other. The white blood corpuscles, or leucocytes, as they are most commonly designated, are much lighter than the red and they will be found along the walls of the blood vessels wandering along in most cases quite unconcerned with reference to what the red blood corpuscles may be doing. If a mechanical irritation or a stimulation is applied to the tissue there will be moments when the blood will flow rapidly and then there will be a slight dilatation of the blood vessels, and then a contraction of the dilated part occurring with somewhat irregularity in the volume of the vessel as it flows along the blood stream. In some instances in the process of dilatation there will occur quite an accumulation of the blood in

this dilated part, with a sudden contraction following this of the walls of the blood vessels, retaining as it were or for an indefinite time this increased amount of blood. We then have what is usually termed stasis. During this contraction and expansion of the walls of the blood vessels, it has been said, and truly so, that there is a change in the endothelial cells of the walls of the blood vessels. These changes however in the endothelial cells are not always characteristic in their general appearance, and it sometimes happens that the phenomena looked for in these cases are not as characteristic as many of the text books would lead us to infer.

During contraction and dilatation with a rythmical contraction of the blood vessels we are very liable to have exposed to view along the inner walls of the veins, as well as the arteries, an increased amount of the white blood cells or leucocytes. The leucocytes that accumulate along the walls of the veins become more and more increased in number, and if the veins are crowded somewhat it will be found that in a very brief space of time that a number of white blood corpuscles will become adherent to the endothelial cells, and if not completely stationary in their position against the walls of the vessels they will be dragged along the stream and eventually become of a pyriform shape, showing as it were their change produced by their attempt to adhere to the walls of the vessels.

Some writers have designated an important biological phenomena known as chemotaxis of the endothelium for the white blood corpuscles or leucocytes. This movement of the white blood corpuscles along the blood stream, as above described, and this sluggish attempt on the part of the leucocytes to move in their own way along the blood stream, has been called an amoeboid movement. It is a question that is yet not definitely settled whether or not this is truly an amoeboid movement. We all know it is a responsive energy of the cell itself to migrate rather than to be carried along by the blood stream. These factors are important in some particular phases of inflammation, in that there is a question as to just what part the regenerative and degenerative processes may take with reference to the function to the leucocytes in the tissue at this particular time. The function of the leucocytes in some other phases of inflammation is extremely important and will be discussed in a more extended way when we reach the subject of infective inflammation. There the subject of the action of the leucocytes and their important functions will be dealt with more extensively.

EDITORIAL

In every department of human culture a comprehensive survey of its achievements is of great moment to contemporary workers, and also of great value to those who are to follow. There are two potent factors in the life of mankind: one is the gaining of a place in the world's progress toward happiness; the other is the contribution of something to the future of mankind. Many enter into a profession and business without any regard to what the future may have from their hands, other, perhaps, than worldly gains. There are a few who enter life with an object almost foreordained—to accomplish something for the happiness and comfort of the future race. Often such persons come into the world from an obscure life, many times having no ancestral history, and springing up from the soil of hard work with no advantages other than those from close and comprehensive attention to rules of good home life.

Scientific investigations have really contributed all the knowledge that we have that we can call anything like definite. The ancient Greeks connected with the word scientific all things that associated with nature. The significance of this word scientific is found best illustrated, and in the purest explanation, in the poems of Homer. From that time to the present, scientific investigations have passed through many evolutionary processes and found expression in every pursuit of human life.

At about the time these Homeric poems were written men began to speculate upon the cause of the destruction of tooth substance. From that time to the present the problems of dentistry have passed along in rather an obscure way as an empirical branch of medicine, fulfilling as they have a mission for the alleviation of human suffering, and in some instances for the restoration of a deformed feature of the human face to one of artistic and sightly appearance.

The artistic side of our profession has traveled only the route that is traversed by all scientific callings of life, that is as far as the mechanical side. Mechanics has been the forerunner of all civilized men. Dentistry long ago accepted a place among the mechanics and fulfilled a mission, as have all branches of useful knowledge. Science has two functions, apparently, in the world's progress: one is a practical purpose, which is to search after an agreeable adaptation of

the external conditions of life to the needs of man; the other is a theoretical need, which is to search after harmonious ideals of life and of the world.

Dentistry of today has adapted almost exclusively the practical attitude. The theoretical side of dentistry has only been a speculative sort of pseudo-scientific profession. What hypothesis dentistry had in the earlier times was not based upon practical, workable scientific bases. The theories of dental caries drifted along for more than eighteen centuries. We might say that until 1880 the professions of medicine and dentistry were without scientific reasoning, considering the vast amount of knowledge they seemed to possess. We might say that not until 1853 was there born a man who could become capable of placing dental caries on a workable scientific base. This man finished his work and has passed to that rest that a man of his talent and honesty of purpose justly deserves. The writers of his biography will all tell you of his good traits, his beautiful character, his sincere and honest worth to the world. But words of praise from the hands of any one of us cannot add to his glory nor to his recognition for valuable service to mankind. It was Miller who opened up to the field of biological science, who has placed before the world one of the greatest scientific contributions that has been set forth in this great century of research and scientific study; and we can do nothing more than to pause for a moment and pay a tribute of respect to his memory and his work. He has written the best sketch of his life with his own hand. There is no one who can add or take away from his lustre as a scientific investigator, a true, kind hearted gentleman, with a sincere regard and respect for those who are working in the same fields of professional or scientific investigation. I question if there is any place that anyone can find where Miller ever said a disrespectful or an unkind word to anyone who differed from his opinions, with reference to his scientific work. His modesty and childlike simplicity would always draw the young men to him who wished to learn. While scientific work as put forth by Miller himself will stand the test of time, he has been misquoted, misinterpreted, and will be for generations probably, because there are but a few men who have the desire or the wish to study the profound scientific subjects that make Professor Miller's work of true value to the profession of dentistry. There is one lesson to be learned by Miller's life that should be taken to heart by every young man, and that is that he did something for mankind.

It is theoretical and practical science upon which the real progress of the profession must rest. As we have said in the beginning, dentistry had been a mechanical calling until Miller's scientific investigations placed upon reasonable bases the reasons for certain processes. If we could encourage by Miller's life the essential recognition of scientific work it would be worth as much as the actual work performed by him. He has illustrated above all men the value of science in the progress of dentistry.

The mechanics of dentistry is just as scientific and essential as certain of the biological phenomena put forth by Miller's work, therefore the members of the profession should not dream of the wonders Miller has done, but of what they themselves may do. We have spared with us the man who has demonstrated above all men the true scienitfic value of mechanical principles in the art of filling teeth. I do not have to speak his name in order for the profession to know, who, after Miller's discovery of certain biological phenomena of the oral cavity and the reason for the disintegration of tooth structure, was able to interpret the value of Miller's work, and who by his scientific knowledge of mechanics at once suggested a means whereby the process of tooth destruction may be arrested by mechanical means. Before this time it was merely, as it is in England today, the stopping of a tooth. The man who demonstrates bacteria in tooth structure and its relations to this wonderful pathological process, and the man who is known the world over as extension for prevention, their names will last in the dental history long after the epitaphs of those who are living today are written, and even after generations that follow have gone.

It is only fitting that the profession of dentistry should stop for a moment and think of the loss that has occurred in the death of Dr. W. D. Miller. His work and his kindly nature are elements of a sincere and true manly life, lived and wrought out by an individual himself, a life which has given to the dental profession a recognition that causes it to stand out among the learned professions of the world today. We all regret his loss, the loss of a scientific investigator. His nature should teach men never to say aught against the scientific investigations of others. It was Miller who knew the possibilities of error in scientific work, and it was he who acknowledged his shortcomings in scientific investigations, to the extent that men in scientific walks of life acknowledged him as a true scientific investigator.

G. W. C.

ORIGINAL CONTRIBUTIONS

TOOTHSOME TOPICS.

BY R. B. TULLER.

Unquestionably every man, and especially every dentist, ought to have a vacation.

I got mine—in small sections, and didn't go far from Chicago.

Oh, it certainly does a man good to get out on the banks of a beautiful lake, amid trees, and flowers, and bumble bees, and dragon flies, and fill his lungs full of fresh air and ozone—in one of the breathing places of Chicago, our public parks. Huh?

Of course, there's a woman or two with fourteen children, who will hunt out your nook and camp alongside of you; but they have the same privilege. The parks are for "the people" and they deserve it as much as anyone, and I would not deny any of them.

I tell you, I feel sorry for anyone who can't get out into these charming places where nature grows rampant—under the advice and direction of a landscape gardener—and under the watchful eye of the park policeman.

These "bobbies" are watchful all right, but they don't always use the best discretion as to the manner of doing their duty; but one can't have everything his own way.

Now, for instance, a man about my size was wandering about in an aimless sort of way, just seeking recreation and enjoying his stogies, when a bluecoat bobs up and shouts, "Say, you, there! Get aff the grass! Get aff the grass, ye big, fat lubber. What's th' matter wid ye? Can't ye read thim signs?"

But he couldn't choke off the ozone, nor the fragrance of flowers, nor the vision of the miniature rainbow in the spray of the fountain, nor the spangles of sunshine between the leaves of the trees. Really, take it all in all, I don't know what anyone wants to go away from Chicago for. In fact, if you did but know it, many Southern people make this city their rendezvous for the summer and seek no further.

One day when visiting a park on the outskirts that was entirely new to me, I chanced to look across the street from the park and saw in gilt letters the name of Dr. A. Dubkin Chumpley, D. D. S., and

concluded this was a good time to make a return call for the several I had had from him.

I fortunately found the doctor at leisure and I received a warm welcome. I spoke of how fortunate he was to be in such immediate proximity to a beautiful park, and spoke my sentiments about Chicago as a summer resort, and how unnecessary it was for him to go away, being practically in the park.

"No, Doc," he said, "I want a change of scene. I just got back a few days ago from Goose Lake. Ever been to Goose Lake? No? Well, sir, there's where you get nature that can't be beat. It is a spot 'way up north where there's country around it till you can't rest. I just got back last week and feel awfully rested."

That was a little paradoxical, but that's Chumpley, as witness further:

"They call it Goose Lake 'cause they have so many wild gooses up there, and they are so dum tame they will come up on the bank and eat oats out of your hand. Talk about sport and duck shooting, why, you could come pretty near wringin' the necks of all you wanted.

"Why, I shot one with a revolver. Don't have to have any guns. I didn't take any—just my revolver. There was a bunch of them along the bank and I just held out some crumbs in my hand, and one came up and began eating them. Quietly—you have to be a little sly—quietly I slid forward my other hand with the revolver in it close up to its breast and let 'er go.

"Say, you never saw such an astonished goose in yer life. She hopped up in the air, turned a back summer-set and coughed once or twice and she was dead. Of course the others shied off some, but I could have got a hundred in the same way. But, say, you've got to know the ropes.

"Some feller came up to me shortly after and told me he was a game warden and showed a tin star and said I'd have to cough up a five for that shootin', and after talkin' it over I concluded I better pay than to be dragged off over the trail 13 miles to a justice of the peace.

"After he'd gone a feller came along and said, 'What did you shoot that fer? That's one of the tame decoys;' but he was off 'is nut. It was a wild goose, or I never saw one.

"I told him I'd have my sport anyway and didn't have no goose gun neither.

"Well, I took my goose and wandered to another part of the lake,

and the first thing I knowed I bumped into another warden, an' he showed his star and wanted five dollars. I told him I had just paid five a little ways back.

"He said that wouldn't go, and wanted to see my receipt, and I began to feel goose-flesh all over. Of course, he had me. I put up again, but I made him give me a receipt.

"Well, I got around toward camp, and another feller he says, 'Say, where'd you get that goose?' I told him I shot him, and paid for it, too. He says, 'Well, you didn't pay me. That's one of my geese. See here, its wing is clipped. You'll have to pay me about $2.00 for that goose.'

"Well, I seen I was up against it again an' I paid. Then I wondered what I was lugging the dum goose around for and I slung it in a bush. Shortly after I seen a boy luggin' it into camp. That night we had goose for supper, and I paid seventy-five cents for the supper.

"After all, it was sport, and that's what I was after, and I got it. Never had so much real sport and hunting in my life. I run onto that first game warden again, and I hopped on to him for a receipt. He said the other fellow wasn't any warden; but he said if I'd give him $10 more he'd give me a receipt and permit me to do all the hunting and shooting I wanted. Said there was lots of deer and other game in the woods, and that would let me at 'em all. Said that's what I ought to a done the first thing and then I'd had no trouble.

"So I coughed up the ten and got the permit, and then went for bigger game; but somehow didn't see any, though I was out for hours, but kept in sight of the lake so I wouldn't get lost. You see, I didn't go far enough.

"Then a fellow told me I couldn't shoot deer with a revolver unless I used salt. 'Take a bag of salt,' he said, 'and string it along through the woods for a few hundred yards and then set down and wait.' The deer, he said, would cross the salt trail and follow it right up to where I could shoot 'em as easy as I shot the goose.

"Well, sir, Doc, I worked that for two days and the only deer I saw was going as hard as he could clip toward the other end of the salt trail, and I didn't see him again. Then the feller said I ought to have trailed the salt in a circle, so that whichever way the deer went he'd bump up against me.

"Well, I didn't bring home any game, but I had all the sport just the same. Never enjoyed two weeks of such real sport in my life; and

I'm goin' again next summer, and have got that warden all fixed. Do you know, he was on the same train coming back? Said he'd got leave of absence and he was going to take his vacation in Chicago—and we go to the woods.

"When he found I was a dentist he said he'd got about three gold crowns to put on, and if I'd do 'em he'd fix me with a permit for next summer and include a friend or two. I done it for him, and I've got that permit right here; and, Doc, I want you to go up with me next summer, sure.

"Say, now Doc, I want to tell you of a most romantic experience I had goin' up. You know when I started in dentistry I was pretty poor; and, sir, I had never rode in a Pullman until I started up there; that's the fact. I went and secured a lower berth all right, but when I got on I found two big, fat, good-looking sisters had got the upper berth, and they were wondering how they were ever going to get up there, and so was I.

"Well, I believe in being gallant to ladies, and after several purty stiff hints I told them to not worry any more, I'd take the upper.

"Now, of all the gol durn places to dress and undress in, I think a Pullman berth beats 'em all. Durn if I knew how to do it, but I managed to get my clothes off after a good deal of work, and then I spent a good part of the night trying to keep in the berth. Must have struck a lot of crooked track.

"In the morning I wondered how I was going to dress again. I rubbered a little across the way and saw a feller get his pants on by swinging his legs out over the edge of the berth; then it was me for the same trick.

"I forgot at first about the girls below, but on looking down as I swung my legs out I saw one sitting on the edge of the bunk putting on her shoes. Well, now what do you think happened? That dum train slewed around a curve and the car gave a lurch that simply dumped me out, and, by hokey! I landed right astride of that girl's neck, and we both went sprawling. Gee whiz!

"Well, before I knew it she had me by the hair, and the way she swung on my face and head with the heel of one of them shoes was a caution. I said hold on, it is all a mistake, etc., but she was a fury. Then the sister butted in and told her to stop, and to remember that I was the gentleman that gave up the berth to them.

"At that she let go, and then I got a chance to tell her how it was

and that I was throwed out and didn't intend to jump on nobody's neck, and was awfully sorry it happened, and wished I had more clothes on, etc., and then she switched, began to cry and ducked her head under the bed clothes. Then I felt that same kind of goose-flesh all over me—you know—and to the other one I sad, 'Miss, if you will please cover your eyes I'll climb back in my berth. I'm awfully sorry, and I can assure you it will never, never happen again. It wasn't my fault; the car lurched,' etc.

"Well, *she* was sensible. She said, 'I know it. I don't blame *you,* and I know you are a *gentleman,* anyway.' Then she put her hands over her eyes and you can bet I got up in that berth like a monkey. Gee! Doc, but I was embarrassed.

"Now, you know how it is, Doc, in them sleepers; there was a curtain that hid all that fracas from the rest; but of course they knew there was something wrong and some one called the porter. But it was all over when he came and asked what was the matter. Say, Doc, I shall never forget that girl that was sensible, for she answered, 'Nothing's the matter here; no one called you. You go on about your business.'

"Well, he peeked enough to see that I was in my berth and went away.

"Me? I laid there until them girls went off into some other part of the car and then I got down and got into my clothes; but of all, the rubbernecks you ever saw they was in that car when I came out from behind the curtains. Of course I had a bump or two on my face, but you'd think, the way they stared, no other feller ever got throwed out before. I don't s'pose any feller ever did just the same way, but what I wonder is that more fellers don't. One thing—Doc Chumpley rides after this in a lower berth, or sits up with his clothes on.

"Well, Doc, to square myself I took them two girls into the buffay to breakfast, and the one that hammered me apologized—said it was so unexpected. But dum me if it wasn't the most embarrassing romance I ever got into, and I guess it was to them girls, too; and the worst of it was, they were both such mighty good-looking girls.

"When we parted they assured me that they was satisfied I was a perfect gentleman. And the one that beat me is going to send me her photo. Thought I might forget her—huh? *I guess not.* She was the best looking, and it was so durn romantic I'm going to send her mine—with my clothes—my good clothes on.

"Sorry you have to go, Doc. Remember, I'm counting on you to go up with me next summer."

I am more than ever convinced that Chicago is a good place for me to summer in; and as for Dr. Chumpley, he ought to stay close at home.

A FEW SUGGESTIONS OR POINTERS ON THE USE OF POINTS.

It is only recently that the real value of mounted points has become generally known. It is true that points have been used to a limited extent for many years, but as they have grown better and of more varied forms their increased usefulness has suggested itself, until now they have become a valuable adjunct to the operating equipment and are found on every table. It is not, however, sure that there will be found always at hand a point of proper form and size to suit either the dentist or the case in hand. It is here I wish to interject our suggestion. Take for our purpose a mounted point nearest the shape and size required and one made and vitrified with point and shaft in place, and it can be turned down to the smallest point and still be relied upon to do good service and remain securely attached to the shank. A point mounted in another way will not do. In cavity work is where mostly will be required points of varied and particular shape and size. To make every desirable shape mounted in a mold would be out of the question, and to fill these requirements the dentist's recourse is to his lathe. For example, should you desire a pear or flame-shape point, select from those you have at hand the one most suited to the purpose in size and form, place it in your lathe, and with an old file held upon it in the proper manner you can form a most desirable point in a moment's time. A medium size file is the best, as it cuts more evenly and smoothly. For instance, should you desire a cone shape, select a stump shape of desired size; the file held upon the outer edge at the proper angle will result in a perfect cone shape point. In this way can be made any shape or size desired from any point, as all are easily cut in this way. By this the dentist will find a wider scope of usefulness for his mounted points. A gratified feeling from the results, and finally a great saving in his bur bills, as he will surely find in large cavities a carborundum point of proper size and form is far superior to any steel bur.

DR. J. A. GRIFFITH.

NECROSIS OF THE RIGHT INFERIOR ALVEOLAR PROCESS WITH TREATMENT AND CURE.

BY G. WALTER HINDMARSH, D. D. S., NEW YORK CITY.

On June 6, 1905, Mrs. C., aged 45, upon the advice of her physician, presented herself at my office for examination and treatment, the case being one of necrosis of the right inferior alveolar process. Examinatioi of the oral cavity revealed a quantity of pus which was being discharged from what appeared to be the site of a recently extracted tooth. This, however, Mrs. C. assured me, was not the case. I also found a cloaca or fistulous opening under the chin, a little to the right of the median line, from which there was also a like discharge of a very fetid odor. According to the patient's statement this condition had existed several months and although under treatment, the symptoms continued to increase in severity until the attending physician, concluding that further effort on his part would be useless, referred the case to me as being more within the province of the dentist than of the physician.

Upon a close investigation I discovered a small opening through which I introduced my probe and could feel a piece of bone covering an extended area, which caused the patient great pain. I washed out the tract with a mild solution of H_2O_2, which I followed with glyco-thymoline. This was accomplished with a long pointed syringe and repeated three times a week. It soon became evident that the bone was becoming quite loose, so making a small incision near the alveolar ridge I removed a piece of necrosed bone of even greater size than I had expected. After thoroughly irrigating the canal with glyco-thymoline in 50 per cent strength, I instructed the patient in the method of doing this and prescribed for her a proper syringe and directed her to irrigate the canal thoroughly two or three times a day. This she succeeded in doing in an extremely creditable manner for a week, when she returned for further examination. While making this I became aware of the existence of another piece of bone, which like the former, was too deeply imbedded for removal without first making an incision. This I proceeded to do at a point a half inch to the right of the former, it having healed under the influence of the glyco-thymoline applications. This last piece of bone being readily removed, the fistula was washed two or three times daily with full strength glyco-thymoline. This was continued for a matter of ten days or two weeks, when the repair of the entire canal was effected by granulation.

ABSTRACTS AND SELECTIONS.

PORCELAIN INLAYS.

BY DR. FINNIS E. ROACH, CHICAGO, ILL.

INTRODUCTION.

The rapid development and high state of perfection of the porcelain inlay of today would seem to warrant the ever-increasing confidence in its permanence, and its near approach to the ideal places it in the front rank as a filling material for a certain class of cavities.

While possessing at present an inherent friability which precludes it from first place in cavities exposed to masticatory forces, it will, however, prove eminently satisfactory when properly inserted in judiciously chosen cavities. The practitioner who fails to avail himself of the use of this new filling material is doing himself and his patients an injustice. He not only deprives his patients of the benefit of one of our most valuable aids in tooth restoration and preservation, but he likewise deprives himself of a really pleasant and profitable part of dentistry.

To attain any degree of success in this line of work, it is imperative that each step be taken with precision and a careful observation of minor and seemingly insignificant details.

In consideration of this subject the author purposely avoids the discussion of the various methods, believing that a brief, concise presentation of the method, which is generally conceded to be the most practical, will best serve the purpose of this paper, and hence high-fusing porcelain only will be considered.

INDICATION.

In a broad sense porcelain may be indicated in any conspicuously located cavity, where sufficient bulk of material and secure anchorage is obtainable. More specifically porcelain is indicated: First—In conspicuously located cavities for æsthetic reasons. Second—For teeth lacking in structural strength, porcelain will render the most permanent service. Third—When the nervous strain, incident to proper condensation of gold is to be avoided. Fourth—In teeth

loosened by disease or otherwise incapacitated to endure gold filling.

The indications for porcelain are given in the order of their favor for the respective localities names, viz.: 1st, Labial. 2nd, Labio Gingival. 3rd, Proximal cavities in incisors and cuspids. 4th, Buccal. 5th, Incisal. 6th, Proximo-incisal. 7th, Occlusal. 8th, Mesio-proximal-occlusal. 9th, Disto-proximo-occlusal.

Labial inlays are first in favor because of their conspicuous location, simple construction and freedom from masticatory forces.

Labio Gingival inlays occupy the same position regarding stress, but being less conspicuous and more difficult of construction, are given second place.

Proximal inlays in incisors and cuspids are among the most conspicuous and are free from stress, but being still more difficult of construction, are given third place.

Buccal inlays for cavities (except second and third molars) are not difficult to make and are free from stress, but owing to their inconspicuous location are fourth in favor.

Incisal restorations, while hazardous risks in some cases, are usually justifiable for aesthetic reasons and are placed fifth in favor.

Proximo incisal restorations are quite as conspicuous and hazardous and being more difficult are given sixth place.

Occlusal inlays being inconspicuous and hazardous are given seventh place.

Mesio-proximo-occlusal restorations are in many cases very conspicuous and justifiable, but are given eighth place, being extra hazardous risks.

Disto-proximo-occlusal restorations, being inconspicuous, extra hazardous and difficult to make, are seldom permissible and occupy ninth and last place on the list.

Second, we have classification of cavities with reference to their requirements for retention as follows:

First—Cavities in which frictional resistance affords sufficient retention, namely, labial, buccal, simple occlusal and proximal cavities.

Second—Cavities in which direct planes of resistance are required. Namely, proximal cavities that include incisal and occlusal angles, the walls of which are sufficiently strong to afford adequate means of retention.

Third—Cavities in which some form of pin anchorage is necessary. In this class we may include all large restorations.

CAVITY PREPARATION.

The preparation of cavities for the reception of the various filling materials demands a slight modification to suit certain characteristic features peculiar to each material, and while the preparation for the porcelain inlay is somewhat different to that of gold and amalgam, the fundamental principles apply to all alike. Namely, free access, extension for prevention, secure seating and anchorage, definite margins and so forth.

After breaking down frail walls and removing all decay, use a cross-cut fissure bur and with a sweeping motion straighten the walls. When the general outline is satisfactory, should there still remain undercuts, they should be filled with cement, after which the entire surface should be gone over and thoroughly smoothed so that no obstruction will be left to interfere with drawing the matrix. This is best accomplished with a diamond fissure bur or a similarly shaped Gem or Arkansas stone.

The following rules should be observed in all cavity preparations:

1st. Obtain free access.

2d. Cavity walls should slightly diverge from base to orifice in the direction the matrix is to be drawn.

3d. The margins must be sharp and well defined and *not beveled.*

4th. Avoid all undercuts.

5th. The general outline of the cavity should be free from sharp angles.

6th. Cavity must be so shaped that some form of anchorage will supplement cement adhesion.

First—*Free access.* Matrix can not be properly burnished and drawn nor the inlay inserted, unless free access is obtained.

Second—*Diverging walls* facilitate removal of matrix and insure a better fitting inlay.

Third—*Margins* must be definite in order to get good joints and continuity of inlay with tooth. The bevel will yield an inlay with a feather-edge, which is always an element of weakness and must be avoided.

Fourth—*Undercuts.* It is impossible to draw a matrix where undercuts exist. Cut them out or fill with cement.

Fifth—*Sharp angles.* While it is not impossible to produce

sharp angles in porcelain, it is easier and more artistic if the general outline of the cavity is straight lines merged with rounded corners.

Sixth—*Anchorage.* All inlays must have one or more of the following means of anchorage supplementing that of cement adhesion; either positive or frictional planes of resistance or some form of pin anchorage. By positive planes of resistance we mean the self-retention form of cavity such as the dovetail or its equivalent. The straight mortise joint of the builder's lap of the brick serve as an example of frictional resistance for anchorage. By pin anchorage we mean baking a pin into the inlay to correspond with a hole drilled in the tooth, into which the pin is cemented for anchorage.

SECURING MATRIX.

Having the cavity properly prepared, the next step is to secure a matrix, which shall be an exact impression of the cavity to be filled.

Platinum foil 1001 of an inch in thickness and thoroughly annealed is most suitable. The piece to be used should be cut sufficiently large so that when burnished into the cavity, it will overlap the margins about one-sixteenth of an inch. Place the piece of foil over the cavity and with a large pellet of moist cotton or spunk that will fill the cavity when rolled tight and held with pliers, gradually force the foil into the cavity and continue packing until well fitted to walls and floor. Should the foil be slightly torn at the bottom of the cavity, it will not interfere with the fit of the inlay, as the body will bridge the space when packing. If, however, the tear should be a large one, it may be easily remedied by burnishing another piece over the floor and permitting it to extend up against the walls far enough to maintain its position until the body is packed and baked.

While the matrix is held securely in the cavity with the tightly-packed cotton, the overlap should be pressed down into contact with all adjacent surfaces of the tooth. The cotton should now be removed and the marginal wrinkles all burnished out. For this purpose the author has designed a special set of instruments. The set consists of eight hand burnishers and a double-end teaser.

The three hand margin burnishers are adapted to meet the requirements in all cases.

No. 1 represents the universal burnisher which can be used successfully on all margins except cervical and some approximal margins in molars and bicuspids and for these surfaces No. 2 and 3 will be found well adapted. No. 2 is to be used on distal and No. 3 on mesial cavities. The oval end should be brought to bear on the inner marginal surface, and the flat projecting wing upon the outer surface. Nos. 3 and 4 are used in adapting the matrix to the floor and walls of cavity prior to the use of margin burnishers.

As an aid in burnishing in labial, buccal and occlusal cavities, a small, stiff, curved instrument may be used to hold the matrix while burnishing. It should be laid across the cavity and held in contact with two points on the matrix on the side of the cavity opposite that which is being burnished. This affords a secure means of holding the matrix in place and does not obstruct the view.

In proximal cavities the dental floss will answer the same purpose and when tied permits the use of both hands, while burnishing margins.

In removing the matrix, if there is any suspicion that it has been distorted, return to cavity and refit. If matrix draws with difficulty, the trouble is most likely caused by undercuts or excessive overlap on side of cavity opposite that from which matrix is being drawn. Correct the trouble by eliminating undercuts and trimming matrix close to margin.

In simple cavities, the burnishing may be completed and the inlay baked to completion with reasonable accuracy. But in the more complicated cavities, the surer method is to burnish the matrix after the first and sometimes the second bake.

SELECTING AND PLACING COLORS.

With the shade guide accompanying the body being used while tooth is moist—select and make note of the color for the inlay in hand. No set rule will apply to this part of the work. Experience must be the teacher. Usually the following rule will obtain: Dark yellow or brown cervically, lighter yellows and grays toward the middle and blending out to incisal with light grays and blues.

In carrying out the color scheme five things must be taken into account as factors modifying the color, viz.: thickness of layer, proper bake, the cement, the shadow problem, and underlying color. The thicker the layer, the darker the color, and *vice versa*. A proper bake is essential, as an under bake will not bring out the correct color

and an over-bake will bleach and thereby produce a lighter color —the cement will in most cases darken the inlay and the shadow, while not affecting all inlays, will invariably darken those placed in proximal cavities of the anterior teeth. The underlying color will, of course, affect the selection of enamels.

MANIPULATION OF BODY.

Absolute cleanliness must be observed throughout the entire operation. Especial care should be taken to avoid the contamination of mineral substances and metallic oxides, such as coal dust, rust from steel instruments and the like. Another precaution to be taken is to burn off, by holding the matrix in the bunsen flame, any foreign matter, such as saliva, blood or small particles of food that may have become attached while burnishing the mouth, before building in the body. The necessary equipment for this part of the work consists of a glass slab of liberal size, a mixing spatula, carving instrument and locking tweezers, two camels' hair brushes, a pipette, some piece of white blotting paper and cottonoid or linen cloth.

A drop or two of water should be placed upon the slab and sufficient powder incorporated to make a stiff putty-like mixture, and after thoroughly mixing—not rubbing—the body is ready to be placed and packed into the matrix. The body should be picked up with a flat, pointed instrument (the carver serves the purpose well), or with a small camels' hair brush; and as each bit is placed it should be well packed by tapping the holding tweezers. To hasten drying, the moisture should be taken up with small pieces of blotting paper. Before making each bake, make a close examination of the matrix to see that none of the body has gotten on cavity side, as the slightest amount will very materially interfere with refitting in the event of a second burnishing, or in the final adjustment for observation of contour and color. Any particles of body that may escape through a torn place in the matrix, or elsewhere, must be carefully and thoroughly removed with the camels' hair brush before baking.

The first bake or foundation is usually made of one color and as it is always within the matrix walls there is no difficulty in placing and packing, but when we come to contour work, the building becomes more complicated. We are then handling two or more colors, and while we are placing these in their respective places with reference to blend and harmony, we must at the same time restore the natural contour. To get the proper blend where several colors are to

be used and baked as one layer, it is best done by placing the cervical portion first, and before it dries place the next color so that it overlaps the first and by a few taps on the holding tweezers, they will run together just enough to properly blend them, and so on until all the colors of that layer are placed.

In building contour it will usually be necessary to build considerable excess and carve to desired form, retining sufficient excess to allow for shrinkage in baking.

If the inlay be for a small, simple cavity, two bakes will usually suffice; and in such cases the matrix should be filled quite to the margins, with a foundation body as near the color of the tooth as possible, and, given the first bake, after which the second or enamel layer should be built up just a little full to allow for the shrinkage. In building the more complex inlays, three or more bakes will be required.

The first and second bakes in large inlays will show very considerable shrinkage, leaving deep fissures, which, unless thoroughly filled when the next layer is placed, will be the source of an imperfect inlay. To facilitate packing body into the fissures place a drop of water in matrix and blow off excess, after which a bit of body may be placed and by a few taps settled into the most remote crevices. Packing a thick paste of body in a dry matrix is very liable to bridge the cracks.

BAKING.

Since the bodies furnished by the different manufacturers vary materially in fusibility, likewise the heat produced by the different furnaces, it is impossible to bake by any set rule. The bake like that of harmonizing the color can be learned only by actual experience. It matters not how expert you may be with a certain body baked continuously in a certain furnace, you cannot take up some strange body and furnace and accomplish good results at first. You must, by repeated tests, become familiar with your material and appliances. Ascertain by repeated bakings the exact time required to produce a perfect vitrification of the body you are using. By the gold test is meant the placing of a pellet of gold in the furnace with a piece to be baked and continuing the heat a certain length of time after the gold melts. The body to be baked should always be placed in the center of the furnace and the pellet of gold in the same relative position each time. While this may seem to be a trivial matter, it is an

important factor in the uniformity of your bake. An overbake, which is always irreparable, may often be the result of a failure to observe this apparently insignificant precaution. The heat being so much more intense at the center of muffle than either end, and especially near the door, it is obviously important that the position of the body and gold in the furnace be at all times relatively the same.

After the first bake and the matrix has been reburnished around the margins, should the inlay be one of considerable size, it is well to place a second layer of foundation body and draw a thin layer of same well up to all margins. This will form a thin film of higher fusing material along the margins and will prevent the enamel layer from drawing away from this surface, where it is so desirable to have perfect adaptation.

In placing the last layer the body should be built up in excess of the desired contour to allow for shrinkage and all overlapping body should be trimmed off to the margins. Otherwise the feather-edge thus formed is very liable to break off when the matrix is being removed, and should the break occur outwardly, the margin of the inlay will surely be injured.

OVERCOMING WARPAGE.

To overcome the warpage incident to baking large inlays for cavities having parallel walls perpendicular or at right angles to the floor of the cavity, a small sliver of some old porcelain tooth should be ground to fit into matrix so that it will rest at both ends against the walls. The body may be packed around this piece and the inlay completed with little danger of warpage.

PRECAUTIONARY ADJUSTMENT.

After the final bake the inlay should be tried to place in the mouth and observations made as to contour, color, etc., before the matrix is removed. Should the inlay be an approximal one, and by reason of excessive contour require grinding, it is best to do so before matrix is removed, in order that it may be returned to the furnace and the surface glaze restored. If it is found desirable to grind the surface after the matrix is removed, the surface may be very satisfactorily polished with paper disks and oxide of tin polishing paste carried upon an orange wood point in the engine. Grinding will seldom be necessary if the proper care is observed in the work up to this point.

It is always desirable to have the glazed surface on proximal inlays, especially where the contact is with a natural tooth. The self-cleansing surface of a highly glazed porcelain inlay insures a degree of immunity to caries of the approximating tooth, not to be obtained with any other filling material now in use.

STRIPPING MATRIX.

In removing the matrix from the inlay, it should be pulled back away from the margins all around and then by grasping with pliers and rolling upon the point it will usually peel off easily. Should any small pieces of the matrix remain attached to the inlay they may be easily removed with an old burr or a fine-pointed instrument.

All over-lap feather-edge margins must now be trimmed off, and this is best done with a small engine stone rotating along with the edge instead of across, as the latter method is more likely to break the edges, and as the break almost invariably leaves an imperfect margin on the inlay, it should be at all times guarded against.

ETCHING AND CEMENTATION.

To afford a means of attachment for the cement the cavity surface of the inlay should be roughened or grooved. In large inlays this may be successfully done with small knife-edged stones, but in the majority of cases better results will be obtained by etching with hydrofluoric acid. The etching is best accomplished by warming the surface of a piece of paraffin or beeswax and burying the inlay, leaving only the cavity surface exposed, to which a drop of the acid may be applied for five or six minutes, after which the surface should be thoroughly cleansed with a stiff brush before removing from the paraffin. After removal from the paraffin it should be dipped in alcohol or chloroform and dried. The cavity should also be wiped out with alcohol or chloroform and kept thoroughly dry until inlay is cemented to place. After cementation it will be necessary to maintain dryness for a considerable time, and as a means of expediency and comfort to the patient the cement may be protected from moisture by covering with a thin coating of paraffin or sandarac varnish.

In proximal cavities where it is difficult to exert uniform force in setting the inlay, the thin strips of celluloid previously referred to will serve admirably. The strips are exceedingly thin and strong and their transparency permits a good observation of the inlay all the time, which is an aid in determining when it is in place. The

cement should be mixed to about the same consistency required in crown work.

FINISHING.

When the cement has become thoroughly hard and the excess has been removed the margins should be carefully examined to see if perfect continuity of inlay and cavity margins exists, and if the occlusion is correct. As previously mentioned, grinding off the glazed surface of the inlay should be avoided as much as possible, but it is sometimes necessary, and when the stone or disk is to be used on the margins there is less liability of slivering the margins if the stone is revolved inlayward instead of toothward. After the required grinding is done the surface should be polished as indicated above.—*Dental Practice.*

TREATMENT OF ACCIDENTS OF ANESTHESIA.*

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The disturbances resulting from the administration of anesthetics which to a more or less degree evolve the various functions and tisues of the body may conveniently be classified as those affecting, first, the digestive apparatus; second, the circulation; third, the respiration, and fourth, the nervous system. Disturbances of the digestive apparatus usually manifest themselves in two distinct varieties, in nausea and in vomiting. By nausea we understand that well-known sickening feeling, accompanied by retching and a desire to vomit. It is the direct result of reflex movements of the pharynx, esophagus and stomach and is most likely brought about by the irritating vapor of the anesthetic. It is primarily noticed in connection with the administration of chloroform, ether and ethyl bromide, rarely with ethyl chloride or nitrous oxide. Treatment is seldom called for, nature usually helps herself. If we wish to overcome the nauseating feeling by drug administration, small doses of spirits of peppermint or the valerian preparations are recommended, especially validol, a compound of menthol and valerianic acid is deservative of mentioning. Vomiting proper results from complicated conjoint movements of the diaphragm, of the stomach walls, and the

*Read before the Institute of Dental Pedagogics, 1907.

glottis. It is naturally more often noticed in those cases where a full meal is taken shortly before the anesthetic is administered; it rarely occurs in laughing gas narcoses Through vomiting, the stomach empties itself and except dieting for a short time, no further treatment is required. It is essential to clear the mouth and throat from all vomited matter as soon as possible to avoid obstruction of the air passages.

Disturbances of the circulation are eminently dangerous. While they can not be observed directly upon the organs of circulation or the blood itself, fortunately they manifest themselves externally to the trained eye by various color modifications—cyanosis or extreme pallor. Cyanosis is the expression of severe static hyperemia resulting from accumulation of venous blood, viz.: a subcharge of carbonic acid. The blue color appears primarily upon the end organs of the body, viz.: the lips, cheeks, fingers, nose, etc. Cyanosis is always present in dyspnea and asphyxia. Lipothymia, or fainting, is a temporary inhibition of the functions of the brain resulting from the cerebral anemia usually accompanied by more or less complete inhibition of all senses. If the heart should stop completely, general collapse may result. A specific variety of collapse which is marked by the suddenness of complete heart failure is referred to as syncope. This syncope, when occurring in the early stages of administering a narcotic and accompanied by typical staring of enlarged or reduced pupils indicates idiosyncracy to the narcotic used. The treatment of the disturbances of circulation consists in applying mechanical and chemical means to bring about increased or renewed heart action. Artificial respiration and powerful rhythmical compression of the heart's region are essential. Stand on left side of patient, and with right thumb press powerfully into the region between the apex of the heart and the left wall of the sternum; the left hand should be placed over the thoracic region of the patient to steady the body and compression should be applied about a hundred times a minute. Slapping the face and chest of the patient with towels wrung in cold water acts as an active reflex stimulant. Nelaton suggests lowering the head or complete inversion of the body to promote rapid flow of blood to the anemic brain. Both means produce excellent results. Stimulation by chemical agents consists of applying strong irritating substances to the nostrils in the early stages of collapse, such as ammonia, in the form of smelling salts or its various solutions, acetic

ether, eau de cologne. As a powerful dilator of the peripheral vessels the vapors of amyl nitrite are exceedingly useful by placing three to five drops of this drug upon a napkin and holding it before the nostrils for inhalation. Flushing of the face and an increase of the frequency of the pulse follows almost momentarily. For convenience sake, amyl nitrite may now be procured in glass pearls holding from three to five drops. Nitroglycerine solution manifests a similar typical nitrite action, a 100ths of a drop in the form of a hypodermic tablet placed upon the tongue is a useful stimulant of the circulation. Perfect respiration is absolutely essential to aerate the blood in circular disturbances.

Disturbances of respiration are either mechanical or functional in their nature. To avoid possible mechanical obstruction during narcosis which may occlude the trachea, careful inspection of the oral cavity should always be resorted to before beginning to anesthetize. Artificial teeth, removable bridges, chewing gum, and ditto tobacco, and many other things may be looked for in the mouth. In extracting teeth, extreme care should be exercised to deposit the tooth in reality outside of the mouth. A tooth is liable to spring from the forceps, or more often, when forced from an alveolus by the elevator, may fall backward and enter the trachea. To avoid such an occurrence the Carter's oral net spoon has been devised. If the slipped tooth can not be caught by the finger or the instrument, an effort should be made, in extreme cases only, to force the tooth into the gullet by pushing it backward and a little to the left, thus gaining entrance into the esophagus. Vomiting will promptly produce the tooth. In the early stages of anesthesia occasionally inhibition of respiration is produced by tonic spasms of the muscles of the tongue, thus forcing this organ against the soft palate and the posterior wall of the pharynx. This same phenomenon may occur during profound anesthesia in a patient assuming a recumbent position. To overcome the stenosis of the larynx, the lower jaw should be thrown forward by pressing against the two rami posteriorly. This movement is known as the Esmarch (English) or Howard grip. A tongue forceps may be inserted and the tongue pulled forward or even piercing the tongue with a needle threaded with stout silk and applying rhythmical traction has been resorted to.

The typical organic impairment of respiration are known as apnea, dyspnea and asphyxia. The differentiation between these

three forms of suffocation rests probably more with the severity of the disturbance than with the kind; they are primarily the result of a less or greater paresis of the respiratory centers. The supreme remedy is artificial respiration, viz.: an artificial means for the thorough ventilation of the blood and lungs replacing the narcotic with air until normal functions of the organ is established. One of the older methods of forcing air into the system is the mouth-to-mouth insuffiation. Today this method is abundant. The same is true of the bellows method. Artificial respiration may be applied by any of the known methods that serves its purpose well, provided the employed method is thoroughly understood. There is no need to enter into detail in this connection. The text-books furnish amply illustrated descriptions of these methods. Faradization of the diaphragm is sometimes useful; however, too much should not be expected from the electric current. A careful and quickly instituted artificial respiration is the alpha and omega of all methods of resuscitation. The proper use of the first minute is of more real value in the preservation of the extinguishing life than all the hours thereafter. No precious moments should be lost by rubbing the patient, applying smelling salts, or other secondary means. Artificial respiration may often be profitably continued for an hour or longer until fairly normal lung activity is established.

As far as medication is concerned, the only drug that has proved to be of value in this connection is strychnia in full doses by means of hypodermic injections.

Nervous disturbances during or following anesthesia usually manifest themselves in two definite forms, in those affecting the physche proper and those unbalancing the motor centers. Physical excitement is a common occurrence in the preliminary stages of narcosis; hysterics and alcoholics furnish by far the largest contingent. Intense muscular exertion combined with clonic or tonic spasms frequently result in an increased pulse rate with more or less cyanosis and stertoreous respiration. If we possess an anamnestic clue in regard to existing hysteria or alcoholism, a hypodermic injection of morphine half an hour before beginning of the narcosis will materially lessen this preliminary excitement. Occasionally we meet with a patient who will awake from the anesthetic with apparent normal physical condition, but without perfect control of the sonsorium.

The patient remains for some minutes in a sort of lethargic sleep, which at times may reach a deep comatose state. Smelling salts held to the nostrils, cold water dashed into the face, loud talking or shaking will arouse the patient. Disturbances of the motor centers result in more or less severe spasms. Singultus, the ordinary hiccough, is often seen in the early stages of inhalation. Tremor of a single group of muscles or of the entire body is noticed more or less frequently after the taking of smaller quantities of the narcotic; similar tremors as a result of indulging in other narcotics such as tea, coffee or tobacco are noticed in those who are not habitues of these drugs. These muscle quivers are usually confined to the early stages of inhalation and are not dangerous. If they should occur after the anesthetic passes off, the strong will power of the patient materially assists in overcoming those tremors readily. Convulsions, combined with clonic or tonic spasms occur frequently under nitrous oxide anesthesia, much less under other narcotics. Care should be exercised so as to prevent the patient from hurting himself. The removal of the anesthetic quickly relieves the condition. Tetanus, the persistent contraction of voluntary muscles, is frequently seen in the early stages of anesthesia, less, however, when choloform is used. Typical trismus, viz.: tonic spasms of the muscles, which are supplied by the fifth pair of nerves, especially those of mastication, is often very troublesome in dental anesthesia. As a precaution, a suitable mouth prop should always be put in place. Severe forms of tetanic convulsion by bending head and feet backward and known as opisthotonus, are also seen under anesthesia in the early stages; all this muscle disturbances rarely call for treatment, carefully watching of the patient so as to prevent hurting himself, however, is indicated.

In dental literature reference is frequently made to "shock from the anesthetic." By shock proper is meant the depression resulting from an injury or an operation and we are inclined to believe that these "shock stories" of anesthesia can be suitably placed under one or the other of the various disturbances within the four divisions of anesthesia sequences if proper diagnosis is made.

The various statistical tables regarding the death rate of each individual narcotic are of relative value only. If, for example, a given table shows that one out of every three thousand cloroform narcosis is fatal, a careful inquiry into the real condition of this one

fatality should be made and compared to the 2,999 successful administrations. A single handed operation, performed under chloroform in a dirty box car by the aid of a smoky lantern should not be placed side by side for comparison with a narcosis made by a trained anesthetist in a well-appointed hospital.

A committee appointed by the Central Society of German Dentists has prepared careful statistics of dental narcoses from reports by its members, covering a period of three years (1902 to 1905), with the following results:

Chloroform	1	death in	35,342
Ethyl bromide	1	"	112,001
Nitrous oxide gas	0	"	61,108
Ethyl chloride	1	"	2,523

The committee, through its chairman, Dr. Lipschitz, comment as follows on the statistics: These numbers, of course, are not to be regarded as absolutely free from criticism. First, we have to take into consideration that especially those colleagues, who have had a death from an anesthetic in their own practice, are prone to withhold their report from the committee, and, second, the reports of former years are frequently only guesses. Besides, mistakes may have been made in filling out the tabulated record sheets.

Dangerous sequences of local anesthesia are confined to the untoward physiological effects of cocaine and its substitutes and to the dangers of the refrigerating agents. Cocaine and its substitutes may be regarded as being similar in their poisonous results. No true antidote exists which will neutralize the cocaine poison, consequently the treatment is purely symptomatic. To overcome cerebral anemia, amyl nitrite is applied together with recumbent position or even complete inversion. Artificial respiration is essential in severe collapse, while as a heart stimulant, an injection of camphorated oil is useful. The lighter disturbances may be treated with strong coffee or caffeine, given by the mouth. Since we have a clear understanding of the action of adrenaline upon the circulation, its application in conection with cocaine has materially mitigated the dangers of the latter drug.

Ethyl chloride and drugs of a similar nature which are applied for the purpose of reducing the temperature of the tissues and

thus stun the sensation may produce local gangrene by "over-freezing," viz.: the blood supply is cut off for too long a period. Great care should be exercised in the presence of an open flame, as the compounds of this group are highly inflammable.

For the purpose of readily meeting unexpected side effects of anesthetics, every practioner should provide himself, aside from a complete annomendarium, with a stock of emergency drugs, placed in an easily accessible compartment of his medicine chest, consisting of:

Hypodermic tablets of strychnine sulphate 1/30 grain,

Hypodermic tablets of nitroglycerine 1/100 grain,

Amyl nitrite in 5-drop pearls,

Validol,

Aromatic spirits of ammonia,

Camphorated oil,

Smelling salts,

Whisky and a

Hypodermic syringe in good working order.

In my communication on the teaching of anesthesia which was read at the last year's meeting of this august body, I stated that "A warning note should be sounded to be especially careful in experimenting with so-called "new and harmless" anesthetic compounds upon our own clientele, because it should always be remembered that, no matter what the nature of the anesthetic may be, if it is substituted in the organism for an element indispensable to life, it must eventually kill." I can only repeat the same warning and add that this year (1906) we have o report one known death occurring under anesthetizing with one of these compounds. The recent improvements in perfecting the methods of local anesthesia have resulted in placing at our disposal a relatively safe and effective means to combat pain which is amply sufficient in the majority of cases as they occur in dental practice. The rational principle of local anesthesia, of which I have written elsewhere, is deservative of your consideration. A clearer study of the subject has convinced me that it furnishes us with a means for materially reducing and often completely nullifying the pain of dental operations without the aid of a general anesthetic.—*Dental Era.*

MAKING A GOLD INLAY.

BY DR. H. N. ORR, CHICAGO.

Cavity Preparation.—Flat, broad gingival seat, lingual wall slightly diverging to occlusal, buccal wall extended distally to center of buccal surface, angle rounded, flat occlusal seat, deepened distally for retention, occlusal outline extended distally to and including the distal groove, margins slightly beveled.

Technique.—Impression tray made from 28g. German silver plate bent to cover cavity, a hole being cut in occlusal directly over retention point into which an orange wood stick is placed extending through not quite the depth of the retention point. This acts as a handle for the tray and assures carrying the impression material to the bottom of the pit. Pink base-plate gutta percha is used for impression material. The gutta percha is warmed and placed in the tray, care being taken to smooth all wrinkles out of the material. The tray with the material is then inserted and carried to place evenly by pressure on the occlusal and proximal surfaces; it is then cooled and removed. If the impression is not perfect, all excess material is cut away and the impression again inserted and a stream of hot water is played on it until it is felt to give slightly under pressure, then cooled and removed. The impression is then invested with plaster in a rubber ring, the cavity side being exposed and after carving plaster to allow the free removal of the die the impression is smoked by holding it over burning gum camphor. The plaster containing the impression is again inserted in rubber ring and Mellotte's metal is poured into the gutta percha impression, the metal being quite hot and jarring it down slightly as poured. Upon cooling the die is coated with a solution of whiting and alcohol and a counter die run, or the matrix is swedged with a buckshot.

Matrix of 36g. 24 K. gold is used and after swedging is carried to cavity and burnished and the matrix is removed at this time and retention pit is filled with Moss fiber gold and 22 K. solder is sweated in to make it solid. The matrix is then returned to cavity, reburnished, and a bite is taken in modeling compound which is thoroughly cooled before removing. The cavity side of the matrix is then coated with vaseline to facilitate removal from model and a bite run up with plaster and mounted on an articulator. A small piece of modeling

compound is warmed and placed in the matrix and a bite is taken, which is carved to occlusion and contour. The matrix with the contour is then removed, vaselined, and the contour side is invested in plaster, care being taken not to invest deep enough to allow plaster to run on to cavity side of matrix. When plaster has set, remove matrix and replace on model and with a fine wheel bur cut out matrix enough to allow of filling with solder. Smoke plaster mold and run die and counter die of Mellotte's metal and swedge contour of 30g. or 34g. 24K. gold. Trim contour so it will fit cavity and not lap margin of matrix, remove matrix and contour in relation, and catch one point with 22K. solder; return to model and burnish contour to margin, remove and solder remainder to margin.

Carry inlay to mouth and try it for occlusion and contour. If it is high the soft metal may be pressed in with a ball burnisher and a perfect occlusion and contour obtained. The margins are also reburnished and the inlay is removed and filled with 20K. solder through the hole previously cut in the matrix, the proximal surface is then finished and polished and the inlay is set with Ames inlay cement, overlap of margins cut away with plug finishing burs, finished with stones and polished with disks and strips.—*Bur.*

MISCONCEPTIONS CONCERNING PORCELAIN.

BY LOUIS LADEWICH, D. D. S., CHICAGO, ILL.

The first misconception relates to its strength. Porcelain is stronger than it gets credit for, though this misconception is natural in view of the experience the profession has had with it. Porcelain as generally used by the profession is no stronger than its reputation indicates, but porcelain properly manipulated is one of the most serviceable materials that can be used under its proper indications.

One of its chief functions is for use in jacket or shell crowns, where if judiciously employed it is capable of a wide range of usefulness. It may be made to restore a badly broken down incisor where inlays would be treacherous, and where ordinary crowning would call for destruction of the pulp and would introduce the problem of the pin in the canal with its manifest limitations as to danger of splitting the root or perforating it. It may be used as a

means of bringing into alignment many cases of irregular anterior teeth without moving the roots by properly grinding the teeth and contouring the porcelain shells so as to line them up in regular order. I have had many cases of this kind of marked improvement without destroying any pulps. One of the misconceptions about porcelain for this class of work relates to the use of facings. Facings are contraindicated in building porcelain crowns. The moment a facing is ground to fit the case its shade is changed and its strength reduced which can never be restored. More artistic and stronger work may be done by building the entire crown from the mix made by the dentist himself.

And in making the mix another misconception occurs. It is fatal to the best results and the greatest density of porcelain to jar the body into place as is usually done. When a mass of wet porcelain is jarred it causes air bubbles to settle toward the bottom of the mass, and the more it is jarred the larger are the bubbles. This may be proved by placing porcelain on the end of a spatula and jarring it. Then examine it with a glass, and it will be found full of bubbles near the bottom of the mass. Porcelain should be gently pressed or wiped into place with a spatula, in such a manner as to constitute a burnishing of the porcelain. When built up in this way it is very dense and strong and there is little shrinkage in fusing it. I seldom find it necessary to fuse a jacket crown more than once, in any tooth anterior to a molar. I use the highest fusing body I can get, and have no need for more than four shades.

A frequent use I make of the jacket crown is to employ it as a means of carrying a missing tooth. Where a single tooth has been lost in the arch I grind one of the adjacent teeth and make a jacket crown for it. I then trephine the process where the tooth was lost and make a porcelain tooth—crown and root—to fit into the vacant space. The two are fused together with porcelain and adjusted to position—the jacket cemented and the attached tooth implanted. Some of these cases have been in the mouth for more than a year and are still doing good service.

In grinding natural teeth for jacket crowns I invariably keep them dry, directing a jet of compressed air immediately at the point where the stone or bur touches the tooth. By this means I am usually able to grind the most sensitive tooth with little discomfort. But there must be no hesitation or misdirected manipulation. The

operator must know in advance precisely the form he wishes to give the tooth, and then go directly to that form. It should never take more than ten, or at least fifteen, minutes, to grind down any tooth for a jacket crown. In truing up the walls and making a shoulder at the gingival margin I use sharp fissure burs. And they must be sharp. The moment a stone is not true or a bur is the least dull it is discarded. I have used as many as six burs in preparing a tooth for a crown.

The gauge of platinum used for the matrix is 1-1000 of an inch, and it is simply wrapped around the tooth and fitted without soldering. In this way it can be easily peeled from the inside of the crown after fusing. The platinum used should be fresh from the manufacturer and not subjected to the slightest manipulation previous to being adjusted to the tooth. I buy mine by the ounce to be assured that it is not handled by the dealer in any way. Platinum under these conditions is almost as adaptable and soft as tin foil, but it is quickly hardened and stiffened by manipulation.

The possibilities of porcelain in this work are well nigh unlimited, and if any of the statements herein made seem radical or unreasonable I can only add that they are capable of demonstration at any time. Porcelin inlays have been heralded throughout the world, but porcelain jacket crowns are capable of a far wider range of usefulness than inlays.—*Dental Review.*

TEACHING MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS.*

BY J. P. BUCKLEY, PH.G., D.D.S., CHICAGO, ILL.

In teaching materia medica, pharmacology and therapeutics, as in the teaching of all other subjects, it should be the aim of the teacher to make the subject matter as thoroughly interesting and practical as possible. How best to accomplish this end in our dental colleges is the question which your program committee has asked me to discuss. It gaves me pleasure to make this effort before this body, which I consider the most critical in our profession; for I am anxious to know the shortcomings of my method of teaching these subjects that I may give the students under my care a thorough and practical course.

*Read before the Institute of Dental Pedagogics, 1907.

In the first place, let me say that in order to successfully teach any subject, the teacher must be relieved from any conscious effort in learning the subject, that he may put his whole attention to the student's process of learning it. This suggests at once the necessity for the teacher's familiarity with the subject matter of instruction. There is an old axiom which says: "Man's' highest happiness comes from the consciousness of realizing ideals." If this be true, the teacher of any subject can find no true pleasure in his work without the consciousness of realizing some end set up in the life of the student. According to Arnold Tompkins, author of "The Science of Discourse," teaching is the process by which one mind, from set purpose, produces the life unfolding process of another.

The main essential, then, for every successful teacher is to have an aim in teaching, or the teacher's ideal. It matters not who the teacher is, or to whom he is imparting knowledge, this general pedagogic principle holds true. After the teacher has formed the ideal of the work he has to do, the method of teaching should command his attention. By method here is meant, "The way, the process, the movement by which some end set up is realized." So far as the aim in teaching is concerned, there can be no difference of opinion. It is the desire of every teacher, I am sure, during the short time the student is under his care, not to deaden his natural appetite for knowledge; but to stimulate in him a life-long tendency to study. The method by which this aim can best be realized will depend largely upon the individual characteristics of the teacher.

Before calling your attention to the writer's method of presenting these subjects, I am going to take the liberty of defining, according to modern thought, the terms included in the title of my paper—not that I consider it necessary to enlighten this body of men as to the meaning of these terms, but in order that you may know at the outset my reasons for teaching these correlated subjects in the manner which I do.

Materia medica was formely used in a restricted sense, meaning, as the word implies, the materials or substances used in medicine. This term today is used in a broader sense and means the science which treats of drugs. In other words, materia medica is a history of drugs and remedies.

The term pharmacology was derived from two Greek words—pharmacon, drug, and logos, science—meaning the science of drugs.

This is what we understand by the term materia medica, pharmacology being restricted to that part of materia medica which treats of the actions of drugs and remedies upon the tissues, organs and functions of the body.

Therapeutics is the science which treats of the application of drugs and remedies to the treatment of disease.

The teaching of materia medica proper, in our dental colleges, I hold should begin in the freshmen year. The general text-books on the subject can be used, and the subject taught by means of recitations, conducted by competent quiz-masters. To be a good quiz-master requires much more tact and ability than to be a good lecturer. It is here that I desire to emphasize the fact that skill in giving directions and in asking questions arises out of the readiness with which the teacher, by insight and sometimes sympathy, finds his way into the mind of the student in his effort to learn. Written questions on the subject avail little; and if used as a guide should not be followed closely, for it is the quick and true insight of the quiz-master into the essential movement of the learner's mind that enables him to select the right kind of a question to be asked at a certain time. In all cases where we have text-books from which lessons can be assigned, the best results in teaching can be obtained by the recitation method. If the writer was prone to criticize the general methods of teaching most subjects in our colleges, he would say that too much lecturing and not enough quizzing was done. This is largely because of the lack of proper text-books on the various subjects.

The course in materia medica in the first year should include a study of definitions, terms and abbreviations used; metrology so far as it relates to dentistry; the administration of medicines, together with a study of the drugs used in dental practice; their habitat, source, brief descripion, constituents, properties, preparations, dose, etc. The crude drug, together with one or two useful preparations, should be exhibited during the recitations. If there is any part of the entire course in materia medica, pharmacology and therapeutics that is liable to prove uninteresting to the dental student, it is the general materia medica taught in the first year. The attention which is given to this subject depends upon the teacher's ability to interest the student. The student's interest must be aroused and his attention held. When a student feels that the subject before him stands as a

means beween his present, real self and his future, ideal self, he is always interested in that subject. All that is necessary to hold the attention of the class is to show them that that which is being taught has a direct bearing upon their future life. To do this here, as the student is learning the abstract history of the various drugs, the teacher can mention their dental uses. This is something which the general textbooks on materia medica do not give; it is something, then, which the student did not study, and will prove to be a means by which the interest in the subject is greatly stimulated.

The course in the junior year first includes a brief study of the Pharmacopeia. A familiarity with this authoritative work is of the utmost importance, and the student should learn the principal changes and additions in the last edition. The art of preparing medicine should receive some attention, for the writer knows of no better way of illustrating the properties, characteristics, and, to an extent, the application of drugs and remedies, than to study, briefly at least, the art of pharmacy. By this means the student becomes acquainted with many practical pharmaceutic facts which can not be learned and appreciated in any other way.

The pharmaceutical preparations should receive special attention in this year. Nearly all of the text-books on materia medica take up and consider the pharmaceutical preparations alphabetically. This is a serious mistake, in my judgment, and causes much confusion in the mind of the student. It is possible to classify all the preparations according to a definite system by which means they are easily learned. The classification which the writer follows is found on the accompanying chart. I consider no time lost in giving our dental students a practical knowledge of the pharmaceutical preparations. I fully realize that it is desirable and in a sense important for the student to know, for instance, in connection with aconite, that it is perennial, a herbaceous plant which grows abundantly in the mountain forests of France, Switzerland, Germany and the northwestern part of North America; that both the leaves and root are used; that its active principle is a very poisonous alkaloid (aconitine), etc.; but it is far more important that the dental student should know that the Pharmacopeia recognizes several preparations of aconite, the most useful of which, to us as dentists, is the tincture that the product formerly was 35 per cent in strength, but that the United States Pharmacopeia of 1900 reduced the strength to 10 per

cent; that this preparation is an important ingredient in many liniments used in the local treatment of facial neuralgia and pericementitis.

Prescription writing, including incompatability, should be taught in the junior year in my opinion, immediately following the teaching of pharmacopeia and pharmaceutical preparations. This subject should receive the dignity which it deserves in a dental course. There is only one way to learn to be a good prescription writer, and that is to practice, practice, practice. Therefore, after teaching the essentials of prescription writing, the teacher should see that the student continues to practice the art until his graduation, for by this means only can the spirit be inculcated and, in so far as it relates to the dental practice, an exposition be given of the physical and chemical laws and their practical application in pharmacy and therapeutics. One of the real blots upon the fair escutcheon of dentistry today is the fact that dentists generally can not properly write prescriptions, and, therefore, feel compelled to rely chiefly on proprietary remedies in their practice. This is sadly to be regretted; and the best means of checking this far too rapid influx of proprietary remedies—many of which are of doubtful composition and questionable therapeutic value—is to give our students, the future practitioners of dentistry, a practical knowledge of materia medica and pharmacology. By your teaching lead them to see and to appreciate that what we need in dentistry more than proprietary remedies is an intimate knowledge of the Pharmacopeia and of the pharmaceutical preparations therein recognized; for in the many official waters, liquors, spirits, syrups, elixirs, liniments, tinctures, fluid extracts, ointments, powders, pills, etc., etc., or a combination of two or more, can be found the counterpart, or better, of almost every proprietary remedy on the market today. I do not wish it understood that I object to the use of properly compounded proprietary remedies, the formula for which is given; but I do seriously object to the use of any secret formula preparation. I do not blame the concerns who persist in manufacturing secret formula preparations; they are purely commercial concerns and manufacture only what they can readily sell. Neither can I justly blame dental practitioners for using such nostrums, who, while in college, fail to receive practical instruction in these important subjects. I place the responsibilty, gentlemen, where it rightfully belongs—upon the dental teachers whose duty

it was and is to properly instruct our students. These teachers, however, find it difficult to get the students to realize the danger in using these preparations when they read the glaring testimonials so freely given by prominent dentists, many of whom are dental teachers. As an individual teacher, I join with other teachers of materia medica, pharmacology and therapeutics, in asking the support of all our dental teachers in correcting this evil. We promise to do our full duty; but we want your co-operation and support.

In the writer's course, by a combination of lecturing and quizzing, the foregoing subjects are covered by the holidays. The remainder of the junior year is devoted largely to a study of pharmacology, i. e., the actions of drugs and remedies upon the tissues, organs and functions of the body. However, those subjects previously taught are constantly reviewed by practice work. By this time the student should be familiar with the various drugs and important preparations. He should be able also to prescribe for remedies; and now he is ready to know how the remedy acts when applied to a diseased condition.

The tendency in medicine, and also in dentistry, today is to rid the professions of much of the empiricism of the past and to place the treatment of all diseased conditions upon a rational basis. To be able to do this we must know the action of the remedies employed in both health and disease. This course includes a study of the action and dental uses of such classes of drugs as counter-irritants, escharotics, hemostatics, antiseptics, disinfectants, local and general anesthetics, hypnotics, sedatives, stimulants and tonics. Poisons and their chemical and physiological antidotes or antagonists are emphasized. For this part of the course I follow quite closely "Long's Dental Materia Medica," emphasizing the pharmacology and dental use more fully where necessary.

In the senior year practical dental therapeutics is taught, and inasmuch as there is no text-book on this subject which can be followed with profit and satisfaction, the course at present is taught by means of lectures followed by quizzes. One lecture a week on practical therapeutics is given. The lecture is supplemented by experiments and demonstrations. The teacher here should endeavor to eliminate from the course all obsolete methods and devote the entire time to a consideration of the most recent and successful methods of treating the various diseased conditions of the oral cavity. There

is no department of dentistry that has been more thoroughly revolutionized and changed in the last few years than that of dental therapeutics.

The course in therapeutics, like the course in the two preceding years, should be graded and systematized throughout. In the freshman and junior years, general materia medica and pharmacology were the subjects considered. To stimulate the interests of the student, therapeutics, or the dental use or application of the drug or remedy was incidentally mentioned. Now, in the senior year, the aim is to give the student a practical knowledge of treating diseased dental conditions, and in doing this the materia medica and pharmacology, previously studied, should be incidentally reviewed. By this means the student's knowledge of these subjects is kept in mind.

There is one thing that should be insisted upon by the professor of therapeutics, and that is the methods of treatment taught didactically in the lecture room, be put to practical use in the infirmary. If this is impossible because of the impracticability of the methods taught, the professor should have the welfare of the student sufficiently at heart to resign his position, for only practical methods should be taught. I think it essential that the professor of this important department be a man engaged in private practice and not one devoting his entire time to college work. The head of the department should spend at least one-half day each week in the infirmary demonstrating clinical therapeutics. By this means he comes in close contact with the student and can observe the progress made. A record should be kept of each student's work. The student should be required to study carefully each case presenting for treatment, note all the pathologic conditions, suggest the remedies to be used to the best advantage and the method of applying the same. Wherever indicated, a practical prescription should be written by the student and O. K.'d by the professor or demonstrator in charge, for a mouth wash or other remedies to be used by the patient while under treatment.

It will be noticed that I have not discussed in connection with the teaching of therapeutics, the teaching of special pathology. In the college with which I am associated this subject is taught under another chair. The teaching of special pathology and therapeutics should go hand in hand. By this I do not mean that the two subjects should be taught by the same teacher. This may be a conven-

ience, perhaps, but it is not a necessity. It is essential, however, that there be a harmonious relation in the presentation of the subjects; for to properly recognize a pathologic condition, to know what drug or remedy when administered or applied will act the most favorably, and to have that drug or remedy at hand in a convenient form are three essentials upon which all successful therapeutics must stand.

In discussing this question, I have endeavored to mention those subjects which, in my opinion, should be taught to our dental students; and, in a general way, how I teach them. I have avoided going into technical details, realizing that a method of teaching, in my hands, may be successful, while with another it may be an absolute failure. Each teacher must first have an ideal and then he must work out for himself, according to his individual characteristics, the process by which that ideal can be realized in the life of the student.

In closing, I desire to acknowledge my indebtedness for many of the general pedagogic truths in this paper, to a book on "Philosophy of Teaching," by Arnold Thompkins, which it was my good fortune to study while engaged in teaching in the district schools of the State of Indiana.—*Dental Era.*

EXTRACTING DECIDUOUS TEETH.

Sometimes the pulp of a deciduous tooth dies before there is any absorption of the root and often these roots are not turned down as rapidly as those containing live pulps. Therefore, if a deciduous tooth is a mechanical obstruction, or if it causes the permanent tooth to go outside or inside the line so as to make an irregularity, it is very much better to take that tooth out and allow the permanent tooth to erupt in its proper place.—*A. W. Harlan, New York, in Review.*

REMOVAL OF WARTS.

For the removal of warts, as well as corns, salicylic acid is extremely efficacious. It is best used in the following form:

Salicylic acid	5
Extract of cannabis indica	1
Collodion	60

This is to be painted on the wart or corn at bedtime, with a camelshair brush. In four or five days the growth may be readily peeled off with a knife, leaving a tender but entirely healthy skin at its site.—*Clin. Med.*

MEETINGS

THE SOUTHERN ILLINOIS DENTAL ASSOCIATION.

The fifteenth annual meeting of the Southern Illinois Dental Society will be held in East St. Louis, Illinois, on the 22d and 23d of October. The president and members of the executive committee are putting forth every effort to prepare an interesting program, and it is hoped that every dentist in our territory will do his part to make the meeting a memorable one.

HARRY K. BARNETT, Secretary.

NEW JERSEY STATE BOARD.

The New Jersey State Board of Registration and Examination in Dentistry will hold their semi-annual examination beginning Monday, December 9th, and continue through the 10th and 11th. Practical operating and practical prosthetic work beginning 8 a. m. Monday, December 9th. Photograph and preliminary credentials must accompany the application. Meeting State House, Trenton, N. J.

For full information inquire of the secretary, Charles A. Meeker, 29 Fulton street, Newark, N. J.

THE JAMESTOWN EXPOSITION.

In connection with the Jamestown Dental Congress there was held a "Dental Exposition," the main features of which were the United States Naval Dental Exhibit, in charge of Surgeon Richard Grady, and the exhibit of comparative odontology, by Dr. William Bebb, a naturalist, which was brought all the way from Los Angeles, Cal., and is valued at $50,000.

The United States dental exhibit included many hundreds of charts of the teeth of young men from 16 to 24 years of age from all parts of the country, showing at a glance the teeth filled, crowned, treated, extracted, un-erupted, etc.

This process is so perfect that midshipmen, the record of whose teeth has been obtained, can be completely identified after death no matter how mutilated the bodies may be from accidents. The charts

are simple official records of peculiarities of the teeth and of the operations performed on them.

The exhibit in comparative odontology by Doctor Bebb, included two thousand specimens of teeth of men, animals, birds, snakes and in fact of every form of life having teeth. The exhibit is said to be the only one of its kind in the country, and is invaluable. There was shown also skulls of the different human races, their teeth and how well each race preserves its teeth. Doctor Bebb, a son of a great naturalist, declared in discussing the exhibit, that he has trapped 2,200 wild animals and it was a very interesting fact that of those animals he did not find one animal with a decayed tooth.

"But," said the doctor, "my search shows that as soon as the animals become domesticated their teeth begin to decay." To demonstrate this, Dr. Bebb showed the Virginian-Pilot reporter heads of a wild cat and a domestic cat. The teeth of the former were perfect, while those of the latter showed decay.

VIRGINIA STATE DENTAL ASSOCIATION.

The Virginia State Dental Association held its twenty-sixth annual convention in the Inside Inn, at the Jamestown Exposition, September 9 to 11, with a large number of delegates, representing principally every city of the state in attendance.

Officers for the ensuing year were elected as follows:

President—Dr. Edward Eggleston, Richmond.

First vice-president—Dr. S. A. Lee, Lynchburg.

Second vice-president—Dr. Edgar J. Applewight, Newport News.

Third vice-president—Dr. F. W. Stiff, Richmond.

Recording secretary—Dr. George M. Keesee, Richmond.

Corresponding secretary—Dr. W. H. Pearson, Hampton.

Treasurer—Dr. W. H. Ewall, Portsmouth.

Executive committee—Dr. W. H. Mosely, South Boston; Dr. William Pilcher, Petersburg, and Dr. J. W. Manning, Norfolk.

Dr. Pearson was elected corresponding secretary to succeed the late Dr. J. Hall Moore, of Richmond, who had held that office in the association from its organization up to the time of his death a few months ago.

MINNESOTA STATE BOARD OF DENTAL EXAMINERS.

The next regular meeting of the Minnesota State Board of Dental Examiners will be held in Minneapolis at the Dental Department of the State University, on Tuesday, November 12, 1907.

All applications must be in the hands of the Secretary by October 29, accompanied by the fee of $10.

Examinations begin at 10 o'clock sharp on the following subjects: Anatomy, Physiology, Chemistry, Materia Medica and Therapeutics, Metallurgy, Pathology, Oral Surgery, Orthodontia, Operative and Prosthetic Dentistry. The practical examination consists of the preparation of a cavity and the making of a gold filling or the preparation of the root and the making of a crown, or both, for a patient supplied by the board.

All instruments and materials necessary to perform the required operations must be brought to the examination by the applicant.

A diploma from a recognized college must be shown. Any further information will be gladly furnished by

DR. GEO. S. TODD, Secretary,
Lake City, Minn.

MISCELLANEOUS

FLUX FOR SOFT SOLDERING.

Dissolve pieces of zinc in hydrochloric acid until the acid is saturated. Mix with an equal quantity of equal parts of aqua ammonia and alcohol. Filter after a few days' standing.—*Dental Era.*

PAIN AFTER TOOTH EXTRACTION.

The extraction of an abscessed tooth is generally followed by great pain. I have found lysol to be the ideal remedy in such conditions, placing it undiluted in the socket. It will relieve the pain immediately, help to check the hemorrhage, and establish antiseptic conditions in the socket.—G. B. Winter, *Dental Era.*

PREPARING SENSITIVE CAVITIES.

A comparatively painless method of cutting away a large body of sensitive dentin is to have the stones or burs run in water. I am able to do so-called heroic cutting with the stones run in water, so that the water is almost a running stream upon the bur or stone, and it can be run at a high rate of speed.—E. J. Perry, *Dental Review.*

AN IMPORTANT PHYSIOLOGICAL REQUIREMENT IN PULP CAPPING.

In order to encourage the throwing out of secondary dentin as a protective to the pulp, the greatest care must be used to preserve the superficial soft tissue layer of the pulp, from which the secondary dentin is formed, much in the same way as a surgeon preserves the periosteum intact for future bone formation.—F. Coleman, *Dental Record.*

REMOVING RICHMOND OR PORCELAIN CROWNS.

Use a rubber and corundum wheel that is thin and grind from center of cutting edge down to the root. Then take a large, strong hoe excavator of the obtuse variety and force the porcelain and backing in two. Peel off the band and cap, run a crosswise bur around the pin and the operation is then easily completed.—*C. B. Plattenburg, Chicago, in Review.*

REPAIRING AN AMALGAM FILLING.

To repair an amalgam filling, dry it thoroughly, freshen the surface and using a little soft amalgam at first, build it as you wish, being careful to see that the occlusion does not displace it before it sets. If you doubt this just freshen the surfaces of two old fillings and after allowing it to set try and break the joint.—*W. A. Robertson, Crookston, Minn., in Review.*

PRESSURE ANESTHESIA.

When pressure anesthesia is resorted to in the removal of pulps, every possible antiseptic precaution ought to be taken to avoid forcing septic matter into the apical space. Immediate root filling should not be resorted to, but two to five days should be allowed for a restoration of the equilibrium of the circulation in the surrounding tissues.—E. T. Loeffler, *Dental Summary.*

SALIVATION.

Potassium chlorate, 55 per cent, is advisable for the mouth when mercury has been used. It counteracts the action of germs, heals up ulcerations and prevents salivation. We meet salivation right along and possibly 50 per cent of the dentists treat it as pyorrhea, but in this particular condition chlorate of potash will assist us materially.—I. M. Rosenthal, *Dental Summary.*

TOOTH BLEACHING.

If a brown stain persists apply a dilute solution of oxalic acid and quickly wash out cavity with sodium carbonate and plenty of hot water. Desiccate the dentine with hot air syringe, then saturate the interior dentin with white shellac varnish, harden with hot air and fill with white osteo or line it for insertion of porcelain, gold or amalgam.—G. Fisher, *British Dental Journal.*

PYORRHEA POCKETS.

No pocket or pouch alongside a tooth must be left to be filled with food or other foreign matter; it must be cut or scraped out, or burnt, so that the tooth can be kept clean. It is better to have the gum fit closely around the neck of the tooth, even though it only covers one-half of it, than to leave a place to be filled with decayed and decaying matter.—A. W. Harlan, *Items of Interest.*

HYPODERMIC INJECTIONS IN THE GUMS.

At 10 or 20 per cent solution of chloretone in 75 per cent alcohol is valuable as a topical application previous to the use of the hypodermic needle in the gums. The alcohol cuts the mucus and leaves the membrane absolutely clean with resulting sterilization of the field of operation; the anesthetic action of the chloretone insures the minimum of pain.—T. A. Gormley, *Dental Register.*

REMOVING A CONGESTED PULP.

A congested pulp in an anterior tooth is best removed by using crystals of cocain. Dry the cavity thoroughly and partially fill with powdered cocain. Then puncture the pulp with a sharp instrument, letting the serum saturate the cocain. Force this back into the pulp tissue, anæsthetizing it, so that it can always be removed without the least pain. If hemorrhage is not too profuse, fill at once.—*I. P. Buckley, Dental Review.*

CHLOROFORM WATER AS A HEMOSTATIC.

This is used by Spaak (*Journ. de Med.,* September 16, 1906), who finds it superior to all other styptics. It acts with marvelous rapidity, has not the slightest disagreeable taste or odor, is not escharotic, is easily obtainable, and can be made as required. It is not unpleasant when applied, and does not interfere with the surgeon in his operations. Spaak recommends a two per cent simple solution in water.—*Medical Times.*

PYORRHEA TREATMENT.

In case of extremely sensitive teeth and inflamed gums, my preliminary treatment would be the thorough bathing of the teeth and gums with warm carbolized water, using small-pointed syringe. Follow by mechanical removal of all fermenting food particles by careful, but thorough, use of orange wood sticks and pumice moistened with phenol sodique. Two or three sittings with this treatment will greatly lessen sensitive conditions.—Austin F. James, *Western Dental Journal.*

PACKING A CASE.

I pack the rubber, but not in excess, on the alveolar ridge; then I lay on the rubber a piece of the starched cloth that comes on the sheets of rubber, so as to be able to separate the flask for examination. I put in a slight excess of rubber and close the flask in boiling water, allowing the excess to escape to the center. This closes the outside, using the center for the escape, but with no excessive pressure on the center; pressure on the outside does no harm.—Dr. Land, *Dental Digest.*

ODONTOBLAST.

HOW TO SUCCEED IN THE PRACTICE OF ORTHODONTIA.

Orthodontia is a specialty, not only in training, but essentially in practice. Whoever would succeed in its practice must love and cultivate art, especially that highest type of art, the human face. He must enthusiostically love his work and strive for the highest ideals. Then will he be willing to work to overcome difficulties, and will have the courage of his convictions and succeed where others would only fail disastrously.—*E. H. Angle.*

DIFFICULT IMPRESSIONS.

With scattered teeth in the mouth, fill up under cuts and dovetailed spaces with plaster worked in with spatula. Allow this to become hard and smooth as best you can, having it cone shaped. Leave them locked between the teeth and take modeling compound impression over teeth and plaster. The cones can be pushed out sideways and put in place in the compound impression. The process may be reversed, using wax for the cones and plaster for the impression.—O. H. Simpson, *Western Dental Journal.*

TO CUT BACKING FOR FACINGS.

For several years I have done as follows: I take a piece of the gummed portion of an envelope and press it down over the pins of my facing, and with shears trim to size of the facing.

I now have a gummed pattern of the exact size the backing should be cut. I now stick this on my gold plate and trim and punch the holes for pins exactly through where they are already punched in the paper. This saves time and gold.

MILES O. PERKINS, Beaumont, Texas.

TO RE-BAKE AN INLAY.

If for any reason you desire to re-bake a porcelain inlay after you have removed the platinum matrix, make an investment of powdered soap stone and thin shellac varnish, while investment is fresh imbed the inlay cavity side down until flush with margins. Dry slowly, and you may fuse as high as you like with no change to margins or shape. This would probably not do for low fusing porcelain, because the shellac would not all burn out and a discoloration would develop. The soap stone powder may be made by scraping a fresh mechanic's crayon.—J. M. Evey, Monmouth, Ill., *Tri-State Dental Record.*

CUTTING OUT FISSURES.

In cutting out fissures in the molars and bicuspids, instead of using fissure bars, use half-inch knife edge earborundum stones with screw mandrel on right angle; turning the right angle either to the cheek or tongue, whichever will be necessary to prevent the stone from jumping. With the back of the mouth-mirror toward the stone, hold the cheek and tongue out of the way. After cutting the fissure sufficient in depth and width, bevel the edge by leaning the side of the stone against it; and at the same time undercut the opposite side. Use stone in the hand piece in cutting out palatal fissures, and cross-cutting the fissure in top of the lower molars. The green colored stone is not so easily broken and will outwear the others. After they are worn down small use them in cutting out short fissures. I have not used a fissure bur in ten years. The stone cut much faster, smoother, with less pain and less expense.—B. T. Radcliff, *Dental Brief.*

PERSONAL AND GENERAL

Fire.—The dental office of Dr. R. M. Bogle at Nashville, Tenn., was damaged by fire August 16.

Fined for Illegal Practice.—A dentist in Los Angeles was fined $50 for practicing without a license, September 13.

Girl Dies from Hemorrhage.—Mary Eckenfels, 10 years old, died from hemorrhages following the extraction of teeth, Aug. 27, in Chicago.

Randall-Jenings.—Dr. Randall, a dentist in Ocala, Fla., and Miss Lulu Jennings, of Fairfield, were married in the latter place August 11.

Attempts Suicide.—A dentist in Durham, N. C., drank laudanum with suicidal intent August 22. Financial troubles were given as the reason.

Evans-Wilson.—Dr. Thomas E. Evans, of West Utica, N. Y., and Miss Blanche Winnifred Wilson were married September 11 at Ogdensburg.

Hardison-Brown.—Dr. S. R. Hardison, of Columbia, Tenn., and Miss Mary W. Brown, of Salem, W. Va., were married in Salem, September 10.

Case-Probette.—Dr. R. T. Case, of Lacrosse, Wis., and Miss Belle Probette, of Port Huron, Mich., were married September 17 at La Crosse.

Dentist Disappears.—A Detroit dentist has left the city without announcing his departure or destination, leaving a bride and numerous creditors to mourn.

Koontz-Browning.—Dr. George Edward Koontz, of Salem, W. Va., and Miss Reba Ball Browning, of Pocahontas were married September 11 at Pocahontas.

Will Lecture in London.—Dr. J. S. Bridges, a Chicago dentist, will deliver a course of lectures in the London Post-Graduate Dental School on "Porcelain and Gold Inlays."

Sues for Illegal Arrest.—A dentist in Butte, Mont., has brought suit against a justice in that city for illegal arrest and imprisonment, placing the amount of damages at $2,000.

Fox River Dental Society held its semi-annual meeting at Elgin, Ill., September 11. About twenty-five members were in attendance and an interesting program was rendered.

Not Guilty of Illegal Practice.—F. C. Borbridge was discharged as not guilty of practicing dentistry illegally by a magistrate, and the case of T. W. Robinson was postponed one week at Winnepeg, Ont.

Arrested.—Two dentists in Oakland, Cal., were arrested September 4 on complaint of the Secretary of the State Board that they were practicing dentistry without a license. Both were released on bail.

Sues Dentist for Malpractice.—Mrs. Helen C. Phillips has sued a dentist in Chicago for $10,000, alleging that her jaw was broken in an attempt to extract a tooth and that she is unable to laugh or sing.

Dentist Suit for Breach of Promise.—A dentist in Kinsman, Ill., has been sued by a young lady in that place for refusing to carry out his part of an engagement to marry. His present whereabouts are unknown.

Sues Railroad Company.—Dr. J. L. Young, a dentist in Rome, Ga., and formerly at Columbus, Ga., has brought suit against several electric lines for alleged infringement on his trolley wheel patent. The amount claimed is $150,000.

New Dental Society.—The counties of Iowa, Scott, Muscatine, Clinton, Jackson and Cedar, in Iowa, have organized a district dental society and will be known as the Davenport Dental Society, and will be an auxilliary to the State Society.

Dies in Dental Chair.—Edward Doyle, aged 31, died in a dental chair September 17 in Pittsburg from the effects of an anesthetic given for the purpose of an operation for necrosis of the maxillary. The anesthetic was equal parts of chloroform and ether.

Central Illinois Dental Association held its annual meeting at Litchfield, September 17. A large number of dentists were present. A good program had been prepared and the meeting closed with an automobile ride and reception given by Dr. and Mrs. T. T. Baker.

Thief Captured.—After having robbed the office of Dr. C. H. Peters, at Sunbury, Pa., a thief was captured and is being held for trial. Articles which were identified as having been stolen were found in his possession, as was also a list of names and addresses of other dentists.

Doings of Army Dentists.—Contract Dental Surgeon Emmett J. Craig, U. S. A., has been relieved from duty in the Philippine division and ordered to this post for duty, relieving Contract Dental Surgeon John F. Milliken, U. S. A., who has been ordered to duty at Fort Sheridan, Ill.

Texas Dental Board.—Gov. Campbell has appointed the following dentists as members of the State Dental Board: Dr. J. H. Grant, Palestine; Dr. Sam G. Duff, Greenville; Dr. C. M. McCauley, Merkel. Drs. Grant and Duff were members of the old board. Dr. McCauley was appointed to take the place of Dr. Weaver of Hillsboro, who did not wish to serve another term.

The Way it Appeared to the Reporter.—By this machine, an impression is taken of the tooth with wax. This wax is used to make a die and this die is then placed in the machine. Upon the die molten gold is forced by high pressure and the lever of the machine turned and the gold cap or fill is cast. During all this time the patient may be at his work and the only annoyance he is put to is the cleaning out of the

tooth, the taking of the wax impression, and then final placing of the gold cap or filling on the tooth, all of which requires about one-twenty-fifth of the time under the old system of the hammer methods.—Virginia Pilot.

Injuries to Dentists.—J. A. Woodward and W. A. Newton, dentists in Atlanta, Ga., were painfully injured when a carriage in which they were riding collided with an electric car. R. E. Murphy was severely scalded when a vulcanizer exploded in his office in Runtsville, Ala. A. A. Quigley was run down by a carriage in Auburn, N. Y., and badly bruised. F. H. Riley was struck by a trolley car in Kansas City and escaped with a sprained ankle and bruised hip. J. C. Yutzy suffered the fracture of two ribs and other injuries in a runaway accident at Falls City, Neb. R. H. Savage fell down a stairway and was severely injured at Sunbury, Pa. A. D. Clark was kicked by his automobile crank and injured in Charles City, Iowa. R. B. Leonard was severely injured by a patient to whom he had administered gas; he was severely beaten.

Robberies.—Drs. Cunningham, Manistee, Mich, loss $75; Runge & Wittemore, at Houghton, Michigan, loss (both), $250; Lockett, at Bloomington, Ill., loss $20; C. H. Peters, Sunbury, Pa., loss $15.

Removals.—Drs. W. J. Allen, from Calumet, Mich., to Detroit; H. C. Mitchell, from Grand Rapids, Mich., to Rockford, Ill.; E. J. Beers, from Lebanon, Pa., to Bethlehem; J. E. Grant, from Louisville, Ky., to Columbia; W. F. Lasby, from Fairmont, Minn., to California; Burt Ogburn, from Phoenix, Ariz., to Tempe, Ariz; W. G. De Vere, from Tempe, Ariz., to California; G. H. Borgwardt, from Minneapolis to Fairmont, Minn.; A. Papt, from Terre Haute, Ind., to Centralia, Ill.; Chester H. Willey, from Aurora, Ill., to Paw Paw, Ill.; W. H. Karcher, from Tremont, Ill., to Champaign; S. A. Houston, from El Dorado Springs, Mo., to Buttler, Mo.; W. T. Triplett, from Mendon to Herrington, Kan.; W. C. Shaw, from Stanberg, Mo., to Mendon; C. W. Barber, from Redwood Fall, Minn., to Terry, Mont.; A. T. Ross, Hoopeston, Ill., to Lena, Ill.

NECROLOGICAL.

We mourn the loss by death of the following members of our profession:

Dr. W. H. Cain, a dentist at Houston, Texas, died August 22 in Palestine, Texas, from an overdose of strychnine.

Dr. Edward C. Kennon, a dentist in St. Louis, was killed in an automobile accident in that city, September 7.

Dr. G. E. Douglass, a dentist in Hasting, Neb., died September 9 of pneumonia.

Dr. John W. Fielden, a dentist in Fall River, Mass., died September 11. He was a member of the Massachusetts State Dental Society.

Dr. Lumm Greene, a dentist in Springfield, Ky., died from a stroke of paralysis September 18. He was 27 years old.

DENTAL PATENTS

Fig. 1.

858,914. Dental Mallet—George H. Shannon, Cambridge, N. Y. Filed July 19, 1906. Serial No. 326,848. Claim.—1. In a dental mallet, a tamping point having its working end at right angles to its shank and extending to a point below the same.

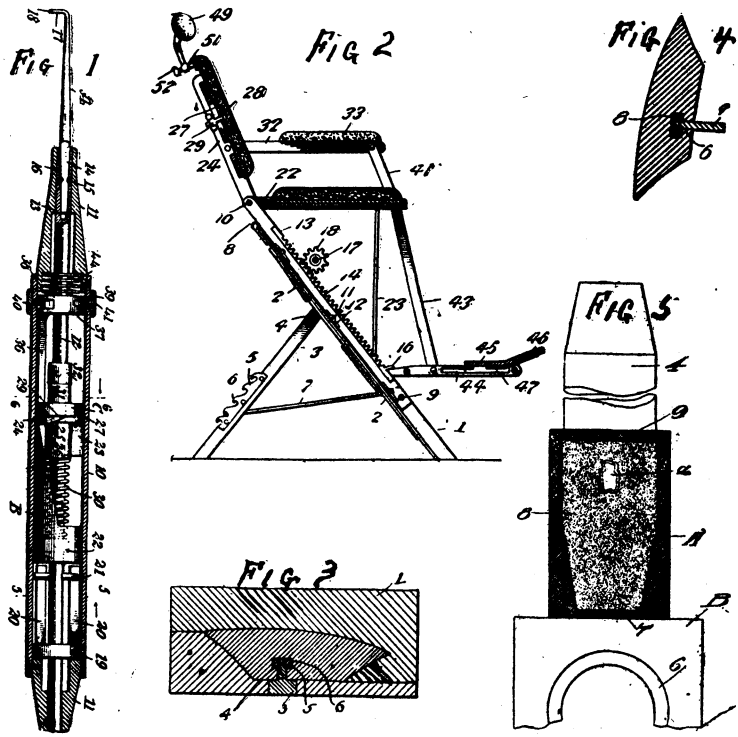


Fig. 2.

858,193. Dental Chair—Logan L. Mallard, Atlanta, Go. Filed January 23, 1906. Serial No. 297,484. Claim. 1. A dental chair comprising main legs, slide bars movably mounted in the legs, means for adjusting t he slide bars relative to the legs, a seat pivotally connected to the slide bar, a foot rest connected to and supported solely by the seat, and a projection formed on each slide bar beneath which the rear end of the foot rest is adapted to be removably engaged, whereby to prevent a forward tilting of said foot rest when in operative position.

Fig. 3

859,335. Method of Fasting Pins in Artificial Teeth—Joseph Ramsperger, York, Pa. Filed November 8, 1906. Serial No. 342,519. Claim.—

1. The method of preparing an artificial tooth for the reception of a pin which consists in incorporating within the tooth while in a plastic state a core of such dimensions as to produce an inwardly enlarged cavity, the portion of the core forming the enlargement of the cavity being of combustible material provided upon its exterior with an encircling sheet of refractory metal and afterwards baking the tooth at a temperature sufficient to consume the combustible mass.

Fig. 4.

858,827. Method of Securing Dowel-Pins in Artificial Teeth—Joseph Ramsperger, York, Pa. Filed November 1, 1905. Serial No. 285,417. Claim.—1. A method of fastening pins to artificial teeth consisting of incorporating within a tooth while in a plastic state, a disk of combustible material having about its circumference a coating of minute particles of refractory metal and afterwards baking the tooth, thus consuming the disk and forming a recess within the tooth and leaving the minute particles of refractory metal burned in the wall of said recess and then soldering a pin to said particles, as set forth.

Fig. 5.

865,112. Method for Contouring Gold Tooth-Crowns—Francis La Chappelle, San Francisco, Cal. Filed February 20, 1907. Serial No. 358,455. Claim.—1. The method herein described of contouring tooth crowns, said method consisting in supporting the partially-shaped crown upon a fusible fac-simile of the tooth upon and in the midst of a bed of substantially granulated metal, so that all of its outer surfaces will be in contact with said metal, then compacting and substantially solidifying the metal particles by pressure to cause the surplus gold to be pushed towards the gum portion or cervex of the tooth, and then subjecting the metal bed to a superior pressure to cause the metal bed and its contained metal tooth and crown to move together and the metal of the bed to flow laterally and thereby press the proposed crown into the irregularities of the metal tooth.

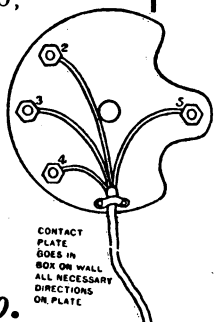
INDEX TO ADVERTISEMENTS.

You can put a new Controller Cord in a Columbia Electric Engine just right, in five minutes.

The "Controller Cord" which conducts the current from the connection box on the wall to the controller, lies on the floor and is often trampled on. In the time the trampling wears through the insulation of the wires within, the current "short circuits" and the engine stops. A new controller cord must then be attached.

In Columbia Electric Engines this operation presents no difficulties. Each end has been so shaped that it will go only in its proper place. The iron plate which fits in the connection box bears full directions for putting in place. The four tips which go into the controller are numbered to correspond with numbers beside the posts on which they go, it is necessary only to put corresponding figures together.

The controller cord of any electric engine will wear out, but it is mighty comforting to know that when it does, you can repair the trouble at once and *without calling in an Electrician.*



The Ritter Dental Mfg. Co.

Rochester, N. Y.